EDUCATIONAL INTERVENTIONS TO MITIGATE OVERWEIGHT AND OBESITY STIGMA: THE MODERATING ROLE OF EMPATHY

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Abstract

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Exploring methods to mitigate biases is a promising and growing field as the harmful consequences and prevalence of weight stigma are already well documented. However, research has shed some light that education and knowledge alone may not be strong enough to reduce biases (Teachman et al., 2003). Therefore, incorporating and expanding empathy research into creating more effective interventions have been considered. Results from empathy induced interventions, however, have not been conclusive and still require further research.

The study explores the role of empathy in moderating the relationship between personalized educational interventions and obtaining changes in both explicit and implicit biases. It is hypothesized that the vignette intervention will result in a greater immediate change in both implicit and explicit biases as compared to the factual educational intervention. For both interventions, explicit biases are hypothesized in seeing a greater

change and thus, a greater modifiability. Furthermore, those with higher trait empathy levels are hypothesized to demonstrate a greater change in reducing negative implicit and explicit biases.

The present study examined how bias towards obesity changed after reading a brief factual handout or a personal story in a sample of 97 undergraduate students. Changes in biases were observed through beliefs and attitudes, both consciously reported and unconsciously tested. Additionally, we explored natural empathetic tendencies as potential moderators of the interventions' effectiveness.

The vignette option did not increase empathy towards obese individuals as intended. The hypothesis that those in the vignette condition would report significant reductions in both negative attitudes and beliefs was not supported. There are, however, weak marginal trend of the vignette condition reporting reduction in the expression of negative beliefs. The hypothesis that unconscious biases were not expected to change as much as explicit biases was supported. Unconscious biases, consistent with literature, were harder to modify. The hypothesis that those with higher trait empathy levels would express lower negative conscious and unconscious attitudes and beliefs after reading the intervention passage was not supported. The results of this study can be used to aid and tailor the style and approach of educational passages in addressing stigmatizing characteristics in ways that not only reduce the reinforcement of negative biases but also actually mitigate stigma.

Table of Contents

List of Tables

List of Figures

Educational interventions to mitigate overweight and obesity biases: the moderating role of empathy

"Fat jokes" are still widely popular and accepted in both comedic circles and the media. Targets of jokes often evolve over time as certain groups gain acceptance and become less stigmatized. Jokes regarding obesity and being overweight, however, have not followed this trend; they are a constant staple in eliciting laughter (Burmeister & Carels, 2014). According to the Disparagement Humor Theory, we can deduce the characteristics that are devalued in our society by exploring how we use humor to denigrate individuals in certain groups (Ford & Ferguson, 2004). Caricatured portrayals of people who are overweight and obese demonstrate the negative labels placed on these individuals, both giving rise to and perpetuating stigma against a complex condition.

Due to reinforcement from the media that body weight is controllable, individuals are primarily blamed for their weight (Puhl & Heuer, 2009; Flint, Hudson, & Lavallee, 2016). Individuals who are thus considered to be overweight or obese are discriminated against: they are often treated differently in many settings such as workplaces and doctors' offices (Phelan et al., 2015). Extensive research has been done on how these individuals are discriminated against as well as the mental, physical, and social consequences of having a stigmatized condition (Corrigan, Kerr, & Knudsen, 2005; Phelan et al., 2015). Despite knowledge gained from this research, results from stigma-reduction interventions have been mixed (Poustchi, Saks, Piasecki, Hahn, & Ferrante,

2013; Teachman, Gapinski, Brownell, Rawlins, & Jeyaram, 2003). The academic conversation regarding immediate and long-lasting interventions to reducing weight-stigma is far from closed.

Understanding and Defining Stigma: Beliefs, Biases and Behaviors

Recognizing stigma as a multilevel construct that involves an intricate combination of cognitive, affective, and behavioral components enables better understanding. Stigma forms through a cognitive framework where "in" and "out" groups are created to place individuals into categories (Link & Phelan, 2001). Although definitions vary, stigma occurs when people with certain perceptible features--associated with negative beliefs and biases regarding various internal characteristics like personality and efficacy--are discriminated against (Link & Phelan, 2001; Flint, Hudson, & Lavallee, 2015).

Stigma is a product of a power structure used to label, separate, discriminate, and give certain systemic advantages and disadvantages to people with favorable and unfavorable features, respectively (Crocker, Major, & Steele, 1998). These behaviors concurrently occur with the negative beliefs and biases. In order to form and maintain stigma, all multidimensional component of negative beliefs, biases, and behaviors are needed. By the nature of the definition, any feature that is deemed undesirable can be used to stigmatize individuals. Currently, weight is a prevalent feature that has been seeing an increase in stigma.

Strength and Prevalence of Obesity and Overweight Stigma

Influenced by the heavily publicized obesity epidemic, negative beliefs, biases, and discriminatory behaviors toward weight are on the rise. Indeed, weight stigma has become an increasingly urgent psychological and social concern (Puhl, Andreyeva, & Brownell, 2008). Potential effects include internalized low self-esteem, negative body image, depression, and an increase in unhealthy eating and lifestyle behaviors (Carr & Friedman, 2005; Stunkard, Faith & Allison, 2003; Rosenberger, Henderson & Grilo, 2006; Puhl, Moss-Racusi, Schwartz, & Brownell 2008).

Substantial empirical evidence shows that these negative beliefs are widespread. Groups as diverse as children, adults, medical students and healthcare professionals are all prone to exhibiting weight stigma (Bell & Morgan, 2000; Li & Rukavina, 2011). Furthermore, a person's own weight does not affect how they stigmatize other people, indicating that in-group support has not shown to be a significant source of help (Latner et al., 2005). While it is becoming more socially inappropriate to express and exhibit stigma towards characteristics like race and religion, the case is not true for weight. This implies that people do not necessarily feel the need to appear explicitly unbiased in effort to adhere to social desirability (Latner et al., 2008). However, despite research supporting that the people are more likely to accurately self-report their weight biases, there is still a need to be cautious of the measures being contaminated by social desirability effects.

Deconstructing Stigma: A Focused Exploration of Explicit and Implicit Biases

Two major types of bias expression have been identified in academic literature (Greenwald & Banaji, 1995). Firstly, explicit biases are consciously reported beliefs and

attitudes that can be measured through self-reported assessments (Greenwald, McGhee, & Schwartz, 1998). Explicit overweight and obese bias are reflected through negative verbal agreements, expressions, and discriminatory behaviors towards those who are overweight and obese. Examples include teasing and name-calling.

Conversely, implicit biases are those that are held unconsciously, outside of a person's conscious awareness (Greenwald et al., 1998). Measuring implicit biases is more difficult as measures must target the unconscious and therefore cannot be self-reported. Bessenoff and Sherman (2000) showed that the distance people naturally chose to sit next to an overweight woman was related to implicit bias regardless of their explicit biased views. This is just one way to assess implicit bias. Researchers have been expanding research on implicit bias and its measures in recent years. Implicit measures provide a more holistic picture of the nature and maintenance of bias because they reveal that biases, unknown to an individual, are projected in automatic behaviors (Greenwald, et al., 1998).

Importance of Differentiating Explicit and Implicit Bias

Surprisingly, literature has been showing discrepancies between the two types of bias. Studies demonstrate that participants can perform socially appropriated explicit biases, at conflict with implicit biases (Cunningham, Preacher, & Banaji, 2001). With proper interventions, both types have shown potential in becoming modified. In broad intervention studies, targeting unconscious bias is not futile (Blair, Ma, & Lenton, 2001). However, when studying stigma-reduction interventions aimed at modifying and

mitigating negative biases, it is important to study both forms to accurately assess what type of bias, if any, is becoming modified. Regardless of explicit and implicit biases, studies have been consistently suggesting that people are more comfortable and willing to express weight biases than other types. Indeed, the differing beliefs of personal responsibility in causing a condition, dictates a difference in responses (Crandall, 1994; Latner, O'Brien, Durso, Brinkman, & MacDonald, 2008).

The Myth of Perceived Controllability

The most common negative label that overweight and obese people face is the belief that they are unmotivated and lazy in preventing what others believe to be a controllable condition (Lewis, Cash, & Bubb-Lewis, 1997; Tiggemann & Anesbury, 2000). Thus, being overweight and obese is seen as a moral flaw (Flint, Hudson, & Lavallee, 2015). Of particular interest, in one study, university students rated peers more negatively who were overweight than peers with physical disabilities (Latner, Stunkard, & Wilson, 2005). Similarly, another study evaluated the strength of bias people felt towards weight, sexual orientation, and religion. The study discovered that weight bias was the strongest among the tested categories (Latner et al., 2008). Both studies suggested that the perceived controllability of being overweight and obese plays a large role in such a discrepancy between the conditions.

Targeting and Debunking Perceived Controllability as Foundational Intervention Concept

Many studies have introduced interventions that attempt to educate people on the inaccuracies of such a belief. Crandall (1994) demonstrated that informing participants of obesity's complex etiology could modify explicit bias. However, other studies do not replicate such findings. Health professionals who specialize in providing treatment for overweight and obese patients have been found to hold the same explicit and implicit biases against weight (Schwartz, Chambliss, Brownell, Blair, & Billington, 2003). These professionals also consciously and unconsciously blame overweight and obese individuals for their condition. Although this specific study did not provide an intervention, the study was conducted under the assumption that these professionals are knowledgeable of obesity's complexity. Other studies have supported such findings, suggesting that both types of bias were hard to modify with a factual, educational approach alone (Teachman, Gapinski, Brownell, Rawlins, & Jeyaram, 2003). Perhaps the implications of such findings include that education and knowledge alone are not strong enough to reduce biases.

The Power and Potential of Empathy

Empathy is an affective and cognitive centered concept that involves being other-focused (Davis, 1983). Literature has been consistent in defining empathy as relating to the emotions of another; one study even suggests that pain perception changes depending on the degree of empathy induced (Loggia, Mogi & Bushnell, 2008). College aged participants who watched an actor experience pain, as they were simultaneously exposed to a painful heat stimulus, reported feeling greater amount and intensity of both physical

and psychological pain. In conjunction with the pain-empathy study, many studies have demonstrated the power of empathy in encouraging more than just changes in attitudes.

Batson, Chang, Orr, & Rowland (2002) found that college students allocated more funds to a drug addiction rehabilitation agency when they listened to an interview of a person imprisoned due to drug charges. These participants exhibited more positive attitudes towards, after being induced with empathy, which translated into action on the participants' part. Furthermore, the empathy-induced action was not limited to just the narrator, but the entire stigmatized group, suggesting generalizability (Batson et al., 2002). This is a promising finding as empathy induction may not only reduce biases but also help people act in accordance to these reductions, signifying possible realistic change.

Mixed Results of Empathy-Centered Interventions to Modify Biases

Based on the findings of related empathy research, empathy has begun to be used as a stigma reduction intervention. However, using empathy to mitigate the occurrence of the both types of biases has shown inconsistent results (Poustchi et al., 2013; Teachman et al., 2003).

Teachman (2003) attempted to induce empathy by having adult participants read a first person narrative about experiencing weight discrimination. Compared to the controls, implicit bias was not observed to change in this high-empathy group except among overweight and obese participants. In the first part of the study, a different group read an intervention highlighting genetics as obesity's main cause. This approach did not

achieve lower implicit bias. However, when a different group read that obesity was caused due to inactivity, implicit bias increased. These series of studies have demonstrated the implicit bias is modifiable, yet decreasing negative implicit bias is harder to achieve.

In Poustichi et al. (2013), medical students were shown an educational video, designed to induce empathy, about weight bias in healthcare. The study found that negative explicit bias decreased as students demonstrated a decrease in believing perceived controllability and an increase in considering genetic and environmental factors. Adequate intervention research, across different conditions, have shown the possibility of decreasing explicit bias, yet interventions that modify implicit bias have yet to be widely successful.

Dispositional Empathy as Potential Moderator Between Personalized Educational Intervention and Changes in Bias

Perhaps a different approach in determining empathy's influence between the type of intervention and eliciting changes in bias is through exploring its two dimensions: trait and state. Trait empathy refers to a person's stable dispositional level that dictates the person's general reactions to situations and people (Davis, 1983). Conversely, state empathy varies by situations, revealing current empathetic feelings (Johnson, Cheek, J.M., & Smither, 1983).

Specifically, trait empathy has been associated with the ability to become engaged in a narrative. Becoming fully engaged in a narrative, or with people, encompasses both

the cognitive and emotional components of empathy. This multidimensional construct highlights other-oriented feelings that naturally help a person take the perspective of others, identify emotionally with others, and express concern and sympathy for others. More importantly, this ability, known as transportation, has been linked to modifying beliefs and attitudes conforming to those championed by the narrative (Green & Brock, 2000; Hall & Bracken, 2011). Often times, these narratives introduce and advocate a health issue, such as safer alcoholic drinking practices among college students (Braverman, 2008). Studies have suggested that in order to improve beliefs, attitudes, and eventually behaviors towards health concerns, increasing the degree of transportation into the intervention narratives, and may be effective (Kreuter, Green, Cappella, et al., 2007; Slater, 2002; Slater & Rouner, 1996).

Present Study

Weight stigma research has primarily focused on the discrimination and prejudices that people who are overweight and obese encounter in different levels of society, both systematic and interpersonal (Phelan et al., 2015). The belief that weight is controllable may have cultivated both explicit and implicit negative bias towards overweight and obese individuals. This belief thought to be a primary catalyst for stigma against these individuals. Furthermore, the strength of such biases is thought to stem from how much emphasis is placed on controllability (Tiggemann & Anesbury, 2000).

Exploring methods to mitigate biases is a promising and growing field as the harmful consequences and prevalence of weight stigma are already well documented.

However, research has shed some light that education and knowledge alone may not be strong enough to reduce biases (Teachman et al., 2003). Therefore, incorporating and expanding empathy research into creating more effective interventions have been considered. Results from empathy induced interventions, however, have not been conclusive and still require further research.

The study explores the role of empathy in moderating the relationship between personalized educational interventions and obtaining changes in both explicit and implicit biases. It is hypothesized that the vignette intervention will result in a greater immediate change in both implicit and explicit biases as compared to the factual educational intervention. For both interventions, explicit biases are hypothesized in seeing a greater change and thus, a greater modifiability. Furthermore, those with higher trait empathy levels are hypothesized to demonstrate a greater change in reducing negative implicit and explicit biases (Figure 1). The results of this study can be used to aid and tailor the style and approach of educational passages in addressing stigmatizing characteristics in ways that not only reduce the reinforcement of negative biases but also actually mitigate stigma.

Negative implicit and explicit biases are pervasive and must be further researched to ensure that society does not discriminate against stigmatized individuals. As there is currently a growing public understanding recognizing the need for further anti-discrimination research and laws, finding efficient bias reduction interventions are a must (Puhl et al., 2015).

Methods

Design

The present study examined the effects of personalized educational interventions and empathy on changing biases, both explicit and implicit, among undergraduate students in a mixed design. The personalized educational intervention (the independent variable) was manipulated by randomly assigning participants to receive one of the two educational styles presenting: 1) a factual explanation on obesity and stigma (textbook-like), or 2) an empathy-focused vignette. The factual intervention focused on explaining obesity's complex etiology in an objective way, devoid of its personal impacts on an individual. The vignette was designed to evoke empathy as the first-person narrative detailed a woman's relationship with weight (i.e., how she is being discriminating against because she is overweight despite having a rigorous exercise regimen and an overall healthy diet). Changes in biases (the dependent variables) were observed between these two different conditions (between subjects) and compared between pre and post educational method for each participant (within subjects). Additionally, participant's cognitive and affective subscales of trait empathy (Perspective Taking and Empathetic Concern) examined whether empathy moderated the relationship between the educational intervention and changes in biases. We included participants' gender and BMI as potential covariates in the analyses.

Participants

97 undergraduate students participated in this study, with freshmen being the most common (24.7%; Table 1 for full demographic information). The participants in this study consisted mostly of females (72.2% females). The average age of the participants was 20 years (*SD* = 1.55). The most common race that participants identified as was white (40.2%). The average BMI was 23 (*SD* = 5.61). The majority (47.4%) of participants had BMIs in the normal range as defined by the National Heart, Lung, and Blood Institute. Normal BMI ranges from 18.5-24.9; overweight BMI ranges from 25-29.9 (Table 2). Participants were recruited for the study through Facebook posts and the introductory psychology sample pool through the database SONA. Participation in this study was voluntary and participants received some compensation. Students in Psychology 301 were given course credit. Non-Psychology 301 students were entered into a drawing for one of two $25 gift card at the completion of the study. This study was IRB approved by the University of Texas at Austin's Institutional Review Board (Appendix A).

Statistics of Incomplete and Excluded Participants.

The data of 11 participants had to be removed before beginning data analysis. Seven participants did not complete any part of the study, only answering the consent question. Four participants did complete the full study; however, their ages and current educational statuses did not fulfill the explicitly posted requirements. Three of these four participants were females and were 26, 27, and 35 in age. One of the four participants was a 59-year old male. All four participants were not undergraduate students.

Materials

Interventions. There were two personalized educational interventions used in this study (one factual and one vignette) to test if biases, both implicit and explicit, can be mitigated. Both passages were designed to target the perceived controllability of obesity (Appendix F). The factual intervention was created to mirror a textbook style explanation of obesity's complex etiology. In addition, the factual intervention objectively explained stigma as a concept and some of its widely established consequences. The vignette intervention was created to induce empathy for an overweight/obese woman detailing her struggles with the condition. In the vignette, the woman speaks about her encounters with weight discrimination. The content of both interventions were based on empirical research from the Khan Academy, Yale Rudd Center for Food Policy & Obesity, the CDC, and PBS.

Distraction Tasks. Two distraction tasks were created. One task was given after the first round of self-reported explicit and implicit bias measures. The second was given after the intervention. The distractor tasks consisted of 1) recalling as many countries in the world from memory 2) recalling as many states of the United States (Appendix E). These filler tasks were designed to avoid priming participants of any construct that would affect their cognition and therefore their self-reported measures. In other words, the tasks were designed to give participants a mental break and to reduce the effects of having been asked to fill out many surveys focused on weight.

Demographics. Demographics information was collected at the beginning of the study and included age, gender identification, year in undergraduate, race, approximate weight, and height.

BMI. BMI was calculated using the participants' approximate self-reported measures of height and weight and the 703 x Weight (lb)/Height^2 (in^2) formula.

Measures

Trait Empathy

Interpersonal Reactivity Index (IRI). Dispositional empathy levels were measured by an index of 28-items exploring thoughts and feelings about a diverse array of generalized situational statements (Davis, 1980). Seven items tapped Perspective Taking (PT) (e.g. "I try to look at everybody's side of a disagreement before I make a decision,) seven items tapped Fantasy (FS) (e.g. "I really get involved with the feelings of the characters in a novel,) seven items tapped Empathic Concern (EC) (e.g. "I often have tender, concerned feelings for people less fortunate than me,) and an additional seven items tapped Personal Distress (PD) (e.g. "I sometimes feel helpless when I am in the middle of a very emotional situation.) The four subscales, each focusing on either the cognitive (PT and F) or affective dimension (EC and PD) of empathy, are measured and analyzed independently of each other on a 5-point scale that ranged from "does not describe me well" (0) to "describes me very well" (4). Each subscale score ranged from 0 to 28; a summation score is not meaningful and was not used as not all subscales are positively correlated (Davis, 1980; Davis, 1983; Eisenberg & Fabes, 1990). High

convergent validity was established with previous one-dimensional empathy measures of constructs like self-esteem, social functioning, emotionality, and sensitivity to others; discriminant validity has been established between the subscales (Davis, 1983). In one study, the Cronbach's alphas were 0.77 for PT, 0.78 for FS, 0.74 for EC, and 0.75 for PD (Hall & Bracken, 2011).

Explicit Biases

Measuring stereotyped characteristics and attitudes. The Antifat Attitudes Test (AFAT), a self-reported instrument, is comprised of three subscales measuring three areas related to overweight and obesity bias: Social/Character Disparagement, Physical/Romantic Unattractiveness, and Weight Control/Blame (Lewis et al., 1997). The 47-item instrument uses a 5-point Likert scale with choices ranging from "definitely disagree" (1) to "definitely agree" (5). 15 items tapped into Social/Character Disparagement (e.g. "If fat people don't get hired, it's their own fault,") 10 items tapped into Physical/Romantic Unattractiveness (e.g. "Fat people are physically unattractive,") 9 items tapped Weight Control/Blame (e.g. "Most fat people will latch onto almost any excuse for being fat,") and 13-items were used as filler statements. The individual subscale scores, and a composite score, illustrated weak correlation with social desirability ($r=-0.02$ to $r=+0.19$,) showing discriminant validity (Lewis et al., 1997). Furthermore, the composite score of the 34 non-filler statements portrayed high reliability with a Cronbach's alpha of 0.95 for both males and females. Each subscale also demonstrated high reliability, ranging from 0.77 to 0.91 (Lewis et al., 1997). AFAT has

been used as one of the primary scales in obesity research and obtains high reliability in more recent studies (Li & Rukavina, 2011).

Measuring strength of perceived controllability. The Beliefs About Obese Persons (BAOP) scale measured beliefs of how obesity is caused, mainly tapping into the strength of perceived controllability (e.g. "Obesity is usually caused by overeating") using a 6-point Likert scale ranging from "I strongly disagree" (-3) to "I strongly agree" (+3). A total score, ranging from 0 to 48, was calculated by adding the responses to all 8-items and adding 24; higher scores revealed having a stronger belief that obesity is not under a person's control, revealing lower explicit bias. Cronbach's alphas ranged from 0.65 to 0.82 (Allison et al., 1991) and test-retest reliability was high (Poustchi et al., 2013).

Measuring attitudes. The Attitudes Toward Obese Persons Scale (ATOP) scale was used to assess the strength of agreement with stereotyped attitudes towards obese individuals. Statements focused on perceptions on obese people's internal attributes (e.g. "Obese people are as happy as nonobese people.") with reverse item scoring used negative statements (e.g. "Most obese people are more self-conscious than other people.) This 20-item questionnaire used a 6-point Likert scale that ranged from "I strongly disagree" (-3) to "I strongly agree" (+3). A total score, ranging from 0 to 120, was calculated by adding the responses to all the items and adding 60; higher scores revealed having more positive attitudes towards obese individuals, and thus lower explicit bias. The Cronbach's alpha range was 0.80 to 0.84, indicating high psychometric power

(Allison et al., 1991). Other studies have been able to replicate high alpha values at 0.86 pre-intervention and 0.88 post-intervention (Poustchi et al., 2013).

BAOP scores were shown to positively correlate with ATOP scores (r=0.41), indicating that those who believe that being overweight and obese is not controllable are more likely to have positive views and attitudes towards overweight and obese people. These two scales demonstrate discriminate validity.

Implicit Biases

Unconscious associations between fat/thin and 1) good/bad and 2) motivated/lazy. Unconscious biases were measured through the Weight Task Implicit Association Tests, a response-latency measure that taps into unconscious, automatic associations (Greenwald, McGhee, & Schwartz, 1998) (Figure 3). The logic of the test stems from an understanding that participants will be able to rapidly and more accurately follow instructions to match words (e.g. “excellent,” “terrible,” “slim,” and “large”) to the instructed four category pairings when their unconscious biases match with the instructed category (e.g. “fat people and good, “fat people and bad,” “thin people and good,” and “thin people and bad”) (See Appendix B Measure E for detailed instructions). Two ranges of stereotypes were explored in two weight IAT tests: “lazy vs. motivated” and “good vs. bad” with “fat people vs. thin people.” Acceptable psychometric integrity has been established with mean alphas being 0.78 (Cunningham, Preacher & Banaji, 2001).

This study used the paper-pencil version, adapted from the original computerized one. The paper and pencil version exhibited reasonable psychometric integrity and comparable test-retest reliabilities (r=0.53 for computerized and r=0.63 for paper-pencil versions) (Lemm et al., 2008). This effect is seen as acceptable in implicit association tests where median test-retest reliabilities stand at 0.50 (Lane et al., 2007). In one study, the correlation between the two versions was r=0.57 (Lemm et al., 2008).

IAT scores were calculated using the product: square root of difference, where both score differences and completion ratios are used (Lemm et al., 2007; Teachman, Brownell, & Rawlins, 2003). First, the number of correct pairings between the two categorical blocks is counted (i.e. number of correct pairing of good corresponding to thin and number of correct pairing of good corresponding to fat.) One of these categories is given the designation A and the other B. In this study: A is paired with the stated adjective with Thin and B is paired with the stated adjective with Fat. This differential score was then used in the product: square root of difference formula: "(X/Y)* $(\sqrt{X-Y})$," where X represents the greater numerical value of A or B and Y represents the smaller. (Lemm et al., 2007). The resulting calculation is then multiplied by -1 if B is greater than A. The last step is completed only to preserve directionality. Higher scores demonstrate a stronger negative implicit association with "fat people," indicating a pro-thin and anti-fat bias. Negative scores implicate a stronger negative implicit association with "thin people," indicating a pro-fat, anti-thin bias.

Empathy Manipulation Check

Empathy manipulation check. A 12-item self-reported Likert scale from "not at all" (0) to "completely" (4) was used to tap state empathy, a measure of situational empathy that can vary over time and situations. This measure was used to see if participants reading either the factual or vignette interventions did indeed experience different levels of situational empathy. Statements reflected affective empathy (e.g. "The character's emotions are genuine,") cognitive empathy (e.g. "I can understand what the character was going through in the message,") and associative empathy (e.g. "I can identify with the situation described in the message"). The scale demonstrated high reliability at 0.93 in study 1 and 0.92 in study 2 (Shen, 2010).

Procedures

Participants provided informed consent and completed the study online through Qualtrics at their convenience. Before beginning the study, participants were notified that their responses were anonymous and could withdraw from the study at any time. The participants were first asked demographics questions: age, gender, year in undergraduate, approximate weight, approximate height, whether they had done an implicit association task prior to the study, and if so, how many. Then, they were asked to complete the Interpersonal Reactivity Index to assess their stable, dispositional empathy levels. Afterwards, participants completed a series of questionnaires to measure predisposition and pre-intervention explicit bias levels. These self-reported measures included the Antifat Attitudes Test (AFAT), Beliefs About Obese Persons (BAOP) scale, and Attitudes Toward Obese Persons Scale (ATOP) in this order.

Next, participants completed the Weight Task Implicit Association Test to measure predisposition and pre-interventional implicit bias. This test was used to see if implicit and explicit biases differ.

Before receiving to the personalized educational intervention (the independent variable), participants were given five minutes to type in as many countries they could recognize on the empty world map. This distractor task was designed to give participants a mental break and to reduce the effects of having been asked to fill out many surveys focused on weight.

Afterwards, the participants read a passage about obesity, differing in the personalized educational intervention method (factual or vignette). Before being asked to complete the final tasks of the study, participants completed another distractor task. This time, they were asked to list as many states in the United States that they could recognize on the empty United States map. The same surveys and task stated above were given at the end, with the exception to the Interpersonal Reactivity Index (IRI). This was to see if changes in both explicit and implicit attitudes could be seen immediately after the intervention (Figure 2). Data was generally analyzed using linear and multiple regressions.

Results

Preliminary Analyses

We checked the reliabilities of appropriate measures, relationships between relevant independent and dependent variables, and a manipulation check for the intervention.

Reliabilities of Self-Reported Measures.

The reliabilities of all measures were expressed and evaluated through Cronbach's alphas. The Interpersonal Reactivity Index (IRI), used to measure trait empathy, has 4 subscales that cannot be composited into one score. As such, in this index, the Fantasy subscale (FS) had moderate inter-item reliability among its 7 items ($\alpha = .69$). One of the two cognitive components of IRI, FS is also known as imaginative empathy and addresses the natural tendency for a person to imagine being another person or in another person' situation. The Perspective Taking (PT) subscale had strong reliability ($\alpha = .80$). PT is also measures a cognitive component and is also known as thinking empathy, where items address the natural tendency for a person to take another's point of view. The next two subscales measure affective components. The Empathetic Concern (EC) subscale had the lowest reliability among all the subscales ($\alpha = .66$). EC is also known as emotional empathy that measures sympathetic feelings and concerns towards others. Finally, the Personal Distress (PD) subscale had strong reliability ($\alpha = .78$). PD, unlike the previous three, is a self-oriented construct that hinders the helping of others. These four subscales were used to measure the individual differences of trait empathy in

moderating the relationship between the type of educational intervention condition and changes in biases. PT and EC subscales were of greatest importance as they were examined more closely in the hypothesis. All alphas were in the acceptable ranges reported in the literature.

The Anti-Fat Attitudes Test (AFAT), used to measure the strength of stereotyped negative attitudes towards weight, has three subscales and a composite score. The reliabilities for all four scores are noted, although the composite score is of greater interest for the predictive analysis. The Social Character Disparagement Subscale had a strong reliability for both before and after the intervention of its 15 items ($\alpha = .87$ and $\alpha = .90$, respectively). The Physical/Romantic Unattractiveness Subscale had a strong reliability for both before and after the intervention of its 10 items ($\alpha = .83$ and .83, respectively). The Weight Control/Blame Subscale had strong reliability for both before and after the intervention of its 9 items ($\alpha = .80$ and 0.83, respectively). Reflective of the fact that alpha values increase as the number of items increase, the composite score had the largest values both pre and post intervention ($\alpha = .92$ and .94, respectively) for 34 items.

Three self-reported measures, that did not have subscales, all expressed acceptable reliabilities. The Beliefs about Obese Persons (BAOP) Scale, used to measure strength of the belief that weight is controllable, had good reliability pre and post intervention ($\alpha = .66$ and $\alpha = .68$, respectively) for its 8 items. The Attitudes Towards Obese Persons (ATOP) had strong reliability pre and post intervention ($\alpha = .85$ and $\alpha =$

0.83, respectively) for its 20 items. The State Empathy Measure, taken once after the intervention and used to measure the induction of situational empathy, had a strong reliability of its 12 items ($\alpha = .89$, respectively).

Test-Retest Reliabilities for Pre and Post Intervention of Dependent Variables.

The test-retest reliabilities are reported for AFAT, BAOP, ATOP and the IAT tests using Pearson correlation coefficients. Collapsed against conditions, the relationship between pre and post intervention scores were observed.

A strong, significant positive correlation was found between AFAT pre and post intervention scores (r (88) = .855, $p < .01$), indicating a linear relationship. Those who tended to have high scores before the intervention also tended to have high scores after the intervention. A strong, significant positive correlation was found between ATOP pre and post intervention scores (r (81) = .889, $p < .01$), indicating a linear relationship. The correlation suggests that those who have greater positive attitudes towards overweight and obese individuals pre-intervention also have greater positive attitudes post-intervention. Both the AFAT and ATOP measure attitudes. It appears that preexisting attitudes have an impact on attitudes post-intervention.

To examine the relationship between BAOP pre and BAOP post intervention scores, a Pearson correlation coefficient was calculated. A moderate positive correlation was found (r (87) = .635, $p < .01$), indicating a linear relationship. The moderate correlation suggests that those who tended to believe that obesity is not under a person's

complete control pre intervention also tended to believe this post intervention. The pre and post intervention BAOP scores had the lowest correlation of all the self-reported explicit bias measures, suggesting that beliefs may be the easiest to modify through an intervention.

For the Good/Bad Implicit Association Test (IAT), no significant correlation was found between the test scores, pre and post intervention (r (84) = .184, p = .090). The score pre-intervention is not related to score post-intervention. Collapsed across the two conditions, participants had higher mean scores after being exposed to their invention (M = 3.37, SD = 4.12, N = 87) than before the intervention (M = 2.19, SD = 3.62, N = 92). The anti-fat, pro-thin bias regarding "good" generally increased after the intervention, regardless of the type of intervention received. People found it easier to match "good" with "thin" than "good" with "bad." Good/Bad implicit bias increased.

For the Motivated/Lazy Implicit Association Test, a moderate positive correlation was found between the scores of the test, pre and post intervention (r (85) = .429, p < .01). Collapsed across the two conditions, participants had higher mean scores before being exposed to their invention (M = 2.68, SD = 3.64, N = 92) than after the intervention (M = 2.31, SD = 3.20, N = 87). Those with high scores tended to also have high scores post intervention, suggesting that those exhibiting comparably high levels of pro-thin/motivated bias pre-intervention tended to also exhibit high levels post-intervention. Although not significant, after the intervention, participants found it easier to pair "motivated" with "fat". Motivated/Lazy implicit bias decreased.

Correlations Between Implicit Bias Tests

To examine the relationship between pre-intervention Good/Bad IAT and pre-intervention Motivated/Lazy IAT, a Pearson correlation coefficient was calculated. No significant correlation was found pre intervention between these two IATs (r (89) = .034, p = .751). Those who had a certain bias, either favoring thin or fat, towards good/bad did not predict the bias they had for motivated/lazy. In other words, having a pro-thin bias towards "good" did not relate to having a pro-thin bias towards "motivated."

To examine the relationship between post-intervention Good/Bad IAT and post-intervention Motivated/Lazy IAT, a Pearson correlation coefficient was calculated. A weak positive correlation was found post intervention suggesting the trend of a linear relationship (r (85) = .438, $p < .01$). Those who expressed implicit pro-thin/anti-fat biases regarding good/bad tended to also express these biases regarding motivated/lazy post-intervention.

Correlations Between Explicit and Implicit Measures

A Pearson correlation coefficient was conducted between explicit bias measures: AFAT, BAOP, and ATOP and implicit bias measures: Good/Bad IAT and Motivated/Lazy IAT. Consistent with the literature, all three explicit bias measures and the two implicit bias measures were not significantly correlated, although some measures within each category were correlated. Explicit bias did not relate to implicit bias, indicating that these two biases are different constructs (Table 2 & Table 3).

Correlations Between Trait Empathy Subscales.

To examine the relationship between the PT and PD scores, and therefore replicate findings in the literature, a Pearson correlation coefficient was calculated. A weak negative correlation was found consistent with previous findings (r (94) = -.310, p = .002). Those who had high PT scores, being an other-focused construct, tended to have low PD scores, being a self-focused construct (Table 4).

Empathy Manipulation Check.

To check the efficacy of the empathy induction, a one-way ANOVA was used to examine the difference in state empathy between those who received the vignette intervention and those who received the factual intervention. The difference in total state empathy score did not significantly differ between the two conditions after the two interventions (F (1,88) = .628, p = .430). Participants who were in the factual intervention had a mean score of 31.41 (SD = 8.15). Participants who were in the vignette intervention had a mean score of 32.91 (SD = 9.74). Although not significant, those in the vignette condition did express higher levels of state empathy than those in the factual condition (Table 5). The main hypotheses were still tested and additional exploration analyses conducted although the vignette intervention failed to manipulate state empathy as much as it had intended.

Measuring Individual Differences in Trait Empathy Between Conditions. To check if individual differences of trait empathy exist between conditions, a one-way ANOVA was conducted. There were no significant differences between the two conditions on trait empathy subscales FS (F(1,87) = 2.98, p = .088), PD (F(1,89) = .028,

p = .868), EC (F(1,84) = .910, p = .343), and PT (F(1,90) = .577, p = .449). These results demonstrate that participants, regardless of random condition assignment, had similar baseline trait empathy levels for all subscales (Table 5). In addition, gender differences of dispositional empathy were not significant (Table 9).

Predictive Analyses

Initial hypotheses of this study delved into answering whether both explicit and implicit biases could be modified after immediate exposure to interventions (Figures 6 & 8). The moderating effects of the cognitive and emotional components of trait empathy, through PT and EC, were also explored.

Analysis of Intervention Effects on Explicit Biases. It was hypothesized that the vignette intervention would result in a greater immediate change in the AFAT, ATOP, and BAOP scores compared to the factual intervention. Three separate linear regressions were performed. Attitudes were measured through AFAT and ATOP. Condition was non-significant in predicting post-intervention AFAT scores and ATOP scores (β = -.012, t(87) = -.218, p = .838 and β = .009, t(80) = .175, p = .862, respectively). Higher AFAT scores signify more negative attitudes towards overweight and obese individuals. The factual condition had an average decrease of 0.54 in AFAT scores pre to post intervention while the vignette condition had an average increase of 0.17 pre to post intervention (Table 6). Generally, the endorsement and expression of negative attitudes increased for those who read the vignette condition. However, although not significant, results differed for the ATOP measure. Both conditions had an increase in their scores pre to post

interventions. Increasing ATOP scores signifies more positive attitudes towards overweight and obese individuals. The factual condition had an average increase of 2.49 in ATOP scores pre to post intervention while the vignette condition had an average increase of 2.82 pre to post intervention (Table 6). The results of AFAT and ATOP are not consistent in showing intervention's impact had on attitude changes. The last dependent explicit bias measure was BAOP. Condition was also non-significant in predicting post-intervention scores ($\beta = .113$, $t(86) = 1.366$, $p = .176$). The vignette condition demonstrated a non-significant increase in post intervention BAOP scores compared to factual condition (Table 6). Increasing BAOP scores signifies the strengthening of the belief that being overweight and obese is not completely caused by lack of control (perceived controllability). In other words, the expression and endorsement of negative beliefs have declined. Contrary to the hypothesis, vignette condition did not have a significant effect in decreasing immediate explicit negative attitudes and beliefs (Table 6).

A Pearson correlation coefficient was calculated for the relationship between the BAOP and ATOP scores (Table 2 & 3). A moderate positive correlation was found for pre-intervention scores ($r(84) = .422$, $p < .001$), indicating a linear relationship. A moderate positive correlation was also found for post-intervention scores ($r(85) = .443$, $p < .001$). These results indicate that those who had high BAOP scores tended to have high ATOP scores. Those who had a stronger belief that obesity is not under a person's

complete control also tend to have positive attitudes towards overweight and obese individuals.

Analysis of Intervention Effects on Implicit Biases. It was hypothesized that the vignette intervention would result in greater immediate changes in the Good vs. Bad and Motivated vs Lazy implicit biases compared to the factual intervention. Linear regressions were used to examine the relationship between intervention received and changes in implicit biases between pre and post-assessment.

Condition was not significant in predicting post-intervention Good vs. Bad IAT scores ($\beta = .027$, $t(83) = .027$, $p = 804$). The vignette condition exhibited a non-significant increase in IAT scores, indicating that implicit bias increased post-vignette intervention. A pro-thin matched with "good" bias, and an anti-fat matched with "bad" bias, was stronger after the vignette than the factual condition (Table 7). The hypothesis was not supported.

Condition was also not significant in predicting Motivated vs. Lazy scores ($\beta = -.044$, $t(84) = -.440$, $p = .661$). Both conditions experienced a non-significant decrease in their scores pre to post interventions. The factual condition had an average decrease of 0.15 while the vignette condition had an average decrease of 0.60 (Table 7). Decreasing Motivated/Lazy IAT scores indicates the reduction of the implicit bias that thin people are motivated while fat people are lazy. Overall, implicit biases were difficult to modify and the directionality of the change was not consistent between the tested adjectives.

The Moderating Effect of Cognitive Trait Empathy (PT) Level Differences.

It was hypothesized that those with higher dispositional PT levels would have a greater reduction in biases. In other words, the interventions would work best for those who naturally have higher PT levels. Multiple linear regressions were conducted to test the moderating effect of PT on the relationship of pre and post explicit and implicit biases scores and the intervention condition. The outcome variable was each post-intervention dependent variable score; predictor variables were condition, pre-intervention dependent variable score, PT scores, and the interaction variable of PT and condition. All predictors were entered simultaneously in the model for each explicit and implicit measure. The interaction between PT scores and the intervention condition was not significant in predicting post-intervention BAOP scores ($\beta = -.532$, $t(86) = -1.694$, $p = .094$), ATOP scores ($\beta = -.212$, $t(80) = -1.004$, $p = .318$), AFAT scores ($\beta = -.359$, $t(87) = -1.534$, $p = .129$), Good/Bad IAT scores ($\beta = .104$, $t(83) = .236$, $p = .814$), and Motivated/Lazy IAT scores ($\beta = .506$, $t(84) = 1.260$, $p = .211$).

To examine the nature of the non-significant interactions between PT and post-intervention scores, the PT scores were broken into the lowest and highest thirds. For the low PT group, the interaction between low PT scores and the intervention condition was significant in predicting post-intervention BAOP scores ($\beta = .355$, $t(29) = 3.072$, $p = .005$). The effect of the intervention worked for those who have low, dispositional PT empathy in changing beliefs. The interaction between low PT scores and the intervention condition was not significant in predicting post-intervention ATOP scores ($\beta = .057$, $t(27) = .583$, $p = .565$), AFAT scores ($\beta = .087$, $t(28) = .950$, $p = .350$), Good/Bad IAT scores

(β = -.052, *t*(26) = -.258, *p* = .799), and Motivated/Lazy IAT scores (β = -.216, *t*(27) = -1.282, *p* = .211). Those who had the lowest PT empathy saw the greatest reduction of negative beliefs toward overweight and obese people. For the high PT group, condition did not significantly predict post-intervention BAOP scores (β = -.074, *t*(30) = -.455, *p* = .652), ATOP scores (β = -.095, *t*(27) = -1.110, *p* = .277), AFAT scores (β = -.001, *t*(30) = -.007, *p* = .994), Good/Bad IAT scores (β = -.008, *t*(31) = -.048, *p* = .962), and Motivated/Lazy IAT scores (β = .069, *t*(31) = .418, *p* = .679). Contrary to the hypothesis, the effect of the intervention did not work for those who already had high, dispositional PT empathy.

The Moderating Effect of Affective Trait Empathy (EC) Level Differences.

It was hypothesized that those with higher dispositional EC levels would have a greater reduction in biases. In other words, the interventions would work best for those who naturally have higher EC levels. Multiple linear regressions were conducted to test the moderating effect of EC on the relationship of pre and post explicit and implicit biases scores and the intervention condition. The outcome variable was each post-intervention dependent variable score; predictor variables were condition, pre-intervention dependent variable score, EC scores, and the interaction variable of EC and condition. All predictors were entered simultaneously in the model for each explicit and implicit measure. The interaction between EC scores and the intervention condition was not significant in predicting post-intervention BAOP scores (β = -.230, *t*(80) = -.536, *p* = .593), ATOP scores (β = -.032, *t*(74) = -.115, *p* = .909), AFAT scores (β = -.068, *t*(81) = -

.212, p = .832), Good/Bad IAT scores (β = .006, t(77) = .011, p = .991), and Motivated/Lazy IAT scores (β = .452, t(78) = .882, p = .380).

To examine the nature of the non-significant interactions between EC and post-intervention scores, the EC scores were broken into the lowest and highest thirds. For the low EC group, the interaction between low EC scores and the intervention condition was not significant in predicting post-intervention BAOP scores (β = .211, t(28) = 1.691, p = .102), ATOP scores (β = .078, t(25) = .777, p = .445), AFAT scores (β = -.010, t(27) = -.097, p = .923), Good/Bad IAT scores (β = .050, t(27) = .255, p = .80), and Motivated/Lazy IAT scores (β = -.026, t(27) = -.130, p = .898). For the high EC group, condition did not significantly predict post-intervention BAOP scores (β = .211, t(30) = -.577, p = .568), ATOP scores (β = -.062, t(27) = -.666, p = .511), AFAT scores (β = -.028, t(29) = -.358, p = .723), Good/Bad IAT scores (β = .023, t(29) = .130, p = .898).and Motivated/Lazy IAT scores (β = .087, t(30) = .522, p = .606).Contrary to the hypothesis, the effect of the intervention did not work better for those who already had high, dispositional EC empathy.

Additional Analyses

Gender as a Possible Moderator. Multiple linear regressions were conducted to explore the possible moderating effect of gender on the relationship of pre and post explicit and implicit biases scores and the intervention condition. The outcome variable was each post-intervention dependent variable score; predictor variables were condition, pre-intervention dependent variable score, gender, and the interaction variable of gender

and condition. All predictors were entered simultaneously in the model for each explicit and implicit measure. The interaction between gender and the intervention condition was not significant in predicting post-intervention BAOP scores (β = -.033, $t(86) = -.256$, $p = .799$), ATOP scores (β = -.021, $t(80) = -.252$, $p = .802$), AFAT scores (β = -.009, $t(87) = -.105$, $p = .916$), and Motivated/Lazy IAT scores (β = .134, $t(84) = .872$, $p = .386$). The interaction between gender and intervention condition was significant in predicting post-intervention Good/Bad IAT scores (β = .468, $t(83) = 2.947$, $p = .004$). Although not significant, females had more reduction in negative beliefs and attitudes than males post-intervention, regardless of condition (Table 8). Females had an average increase of 3.64 in BAOP scores, 3.70 in ATOP scores, 0.82 in Good/Bad IAT scores, and an average decrease of 1.65 in AFAT scores and 0.13 in Motivated/Lazy IAT scores. On the other hand, males had an average increase of 3.05 in BAOP scores, 1.01 in ATOP scores, 2.16 in AFAT scores, 2.06 in Good/Bad IAT scores, and an average decrease of 0.94 Motivated/Lazy IAT scores. Overall, the interventions had a greater impact on females than males. In addition, generally, males had greater negative beliefs and attitudes at baseline, before the intervention.

Discussion

Weight stigma research has primarily focused on the discrimination and prejudices that people who are overweight and obese encounter in different levels of society, both systematic and interpersonal (Phelan et al., 2015). The belief that weight is controllable is thought to be one of the primary catalysts in reinforcing both explicit and implicit biases (Tiggemann & Anesbury, 2000). Although exploring methods to mitigate biases is a promising and growing field, previous research has already shed some light that education and knowledge alone may not be strong enough to reduce biases (Teachman et al., 2003). Therefore, incorporating and expanding empathy research into creating more effective interventions have been considered. Results from empathy induced interventions, however, have not been conclusive and still require further research.

The present study examined how bias towards obesity changed after reading a brief factual handout or a personal story in a sample of 97 undergraduate students. Changes in biases were observed through beliefs and attitudes, both consciously reported and unconsciously tested. Additionally, we explored natural empathetic tendencies as potential moderators of the interventions' effectiveness.

Passage Type and Empathy Felt

Unfortunately, the personal story option did not increase empathy towards obese individuals as intended. It appears that, generally, people felt the same amount of empathy after reading either a factual or personal story of obesity and stigma.

Passage Type and Changes in Conscious Attitudes

First, it was found that there were no significant differences of reported attitudes between passage types (Figure 9). Changes in negative attitudes from before and after reading the randomly assigned passage were neither significant nor consistent. Two separate surveys were used to assess attitudes and neither yielded significant results. Regardless of the type of passage, it appears that attitudes are hard to modify than previously thought (Poustchi, et al., 2013). The literature on attitude changes points to the strength of the originally held attitudes as the potential culprit because people evaluate new information in the context of their already established attitudes (Walter & Langer, 2008). This means that participants who already had strong attitudes were not as likely to change their deeply held attitudes because of a simple passage (Bassili, 2008). These attitudes have already undergone subjective evaluations, which the person has already endorsed and validated, that have now been firmly rooted in memory (Crano & Prislin, 2006; Petty, Tormala, Briñol, & Jarvis, 2006). On the other hand, information can change weakly held attitudes because they are not as fixed in memory. It is more possible to persuade a person to change weakly held attitude than it is to change strongly held ones. The findings in literature were consistent with the present study results. Before-passage attitude scores were significantly related to the after-passage attitude scores. Those who already had strong negative attitudes towards obese and overweight individuals were not likely to develop positive attitudes because of a passage. For people to change strong attitudes, stronger interventions are needed.

Past studies have demonstrated that changing attitudes, even strongly held ones, may be possible with the combination of correct strategies. In Hague and White (2005), interventions had a visual component: an attractive, competent, and overweight person educated participants on obesity. Positive contact was facilitated as participants engaged with an overweight person who defied their negative attitudes. In this study, negative attitudes decreased immediately at posttest with this reduction existing even at the 6-week follow-up (Hague & White, 2005). If the interventions are strong enough, it appears that attitude changes can last longer than immediately after the intervention. Therefore, it is highly possible that the present study's passages were simply not strong enough to act as interventions. Attitudes changes not only depend on the quality and strength of the intervention, but also on the amount of effort that is required of the participants to understand and engage with the material (Briñol, Petty, & McCaslin, 2009). Only having a one-page long passage on obesity did not suffice in reducing both negative attitudes and producing more empathy. This suggestion is further supported by the fact that the two passages failed to have significant empathy differences in the present study.

Passage Type and Changes in Conscious Beliefs

Beliefs are separate from attitudes, although the two impact each other and jointly create biases (Campbell & Fiske, 1959). As a result, beliefs towards overweight and obese people were separately measured. There were weak marginal trends, in the context of very low statistical power, of differences in reported beliefs depending on passage type. Although differences were not significant, those who read the personal story

showed a trend of changing their previously held negative beliefs (Figure 7). More participants may be needed to see a greater effect, if any. In addition, stronger interventions that target a variety of negative beliefs, instead of just perceived controllability, may produce significant results. In one study, after a video intervention, participants reported agreeing more with the belief that obesity is a complex condition not simply caused by a person's lack of self-control (Poustchi, et al., 2013). Again, it appears that using a combination of strategies (e.g. video, passages, facilitation of positive interactions, debriefing, etc.) has a greater probability in reducing negative beliefs. However, it is also important to be cautious in introducing and targeting different beliefs. Unfortunately, already existing negative beliefs can strengthen depending on the information provided. A study found that when participants read information emphasizing behavioral control of obesity, they expressed having more negative beliefs (Lewis, Cash, Jacobi & Bubb-Lewis, 1997). Expressed beliefs, whether negative or positive, showed more potential in changing through an intervention than expressed attitudes. Overall, contrary to predictions, the hypothesis that those in the vignette condition would report significant reductions in both negative attitudes and beliefs, was not supported.

Passage Type and Unconscious Attitudes and Beliefs

So far we discussed the changes in consciously reported attitudes and beliefs. However, it is important to consider the attitudes and beliefs that are unconscious and therefore cannot be self-reported. Unconscious attitudes and beliefs are those that may

not be quickly accessible for reflection and evaluations (Schwartz, 2008). In addition, people may feel the need to hide their negative attitudes and beliefs as these views may socially unacceptable (Krosnick, Judd, & Wittenbrink, 2005). As a result, testing for unconscious attitudes and beliefs reveals hidden biases that may be more reliable in predicting realistic behavioral responses (Burke et al., 2015). The hypothesis that unconscious biases were not expected to change as much as explicit biases was supported. Unconscious biases, consistent with literature, were harder to modify (Figures 4 & 5).

Although unconscious biases are hard to change, the directionality of these changes were different depending on what adjectives were being tested. Tests designed to measure unconscious biases do so with automatic word associations. As such, associating either "good" or "bad" with "fat" or "thin" measured the unconscious attitudes that people had. Associating either "motivated" or "lazy" with "fat" or "thin" measured the unconscious belief that those who were obese and overweight lacked willpower. There was no significant change in the number of correct pairings after either passage. No conclusion about the whether unconscious attitudes or beliefs are easier to change can be made. The present study's interventions were not strong enough to change these deeply embedded, unconscious biases. Even studies that introduced positive interactions with people who are overweight and obese did not reduce these biases (Schwartz et al., 2003). It appears that the solutions for changing conscious biases, by introducing multiple components, may not work for changing unconscious ones as these two types of biases

stem from two different systems that can be at odds with each other (Wilson, Lindsey, & Schooler, 2000). Some studies hint that making participants actively think about both their conscious and unconscious attitudes and beliefs, as part of their intervention, can encourage reevaluation and subsequent changes in negative biases (Petty et. al., 2006).

Trait Empathy Levels on Conscious and Unconscious Attitudes and Beliefs

After seeing the general effects, if any, the passages had on both conscious and unconscious attitudes and beliefs, we looked to see if individual differences in natural empathetic tendencies affected the effectiveness of the passages. In other words, we sought to see if those with high levels were impacted differently than those with low levels. It was hypothesized that those who have naturally greater tendencies to take other's perspective, and emotionally related to others, would be more impacted by the passage. People who find it easy to do these tasks are said to better engage with a narrative, and ultimately, with other people (Green & Brock, 2000; Hall & Bracken, 2011). As a result, modifying attitudes and beliefs is thought to be easier for high perspective-takers and those who show high levels of empathetic concern (Kreuter, Green, Cappella, et al., 2007).

Two of the dispositional empathy subscales were broken into thirds. The lowest and highest levels were further examined. The passages had a significant effect for those who had the lowest tendencies to take the perspective of others in changing negative beliefs. The personal story had a significant effect for those who have the lowest dispositional empathy. Furthermore, the passages had a marginal trend in reducing

negative beliefs for those who had the lowest tendencies to show empathetic concern for others. No significant differences between dispositional trait levels were found to influence attitudes. These findings, however, were not consistent with literature. One study, that attempted to reduce homophobia, found that college students who had high PT and EC empathy scores would report having more positive attitudes after the interventions (Burke et al., 2015). Changes in attitudes were influenced by individual differences. Perhaps, these mixed results indicate that more individualized interventions are needed for people with different empathy levels. The hypothesis that those with higher trait empathy levels would express lower negative conscious and unconscious attitudes and beliefs after reading the intervention passage was not supported.

Limitations

A plethora of limitations should be noted in analyzing the results of this study and can be used to improve future studies. First, this study was underpowered due to the small sample size. Recruiting participants was a bit difficult for this study as IRB approval was granted late into the semester. Data collection lasted only for a month. With more time, obtaining a large sample size may have been possible. The original, realistic goal was to have 128 total participants, with 64 per condition, which would have provided 80% power to detect a medium effect size. Having a larger sample size would have increased this power. A study with low statistical power, like this one, has a lower change of detecting real effects. In addition, by increasing sample size, it may be possible to see the results that yielded either a statistical trend or a weak marginal trend in the

context of very low power increase in significance. If, in fact, real statistical trends existed, with more participants, we would expect to see these effects become significant. Furthermore, missing data may have hindered analyses as an individual's before and after scores were important to this study.

However, using many outlets to recruit participants may have introduced problems. Although most participants were recruited through the Introductory Psychology subject pool, the study was also posted on UT calendar events and on the author's personal Facebook page. As a result, the sample was prone to problems arising from convenience sampling. Participants who were recruited through Facebook were probably friends with the author and therefore potentially had similar interests, opinions, and beliefs. The sample was not representative of the undergraduate population at the University of Texas at Austin.

If this study were conducted again, the author would only recruit through SONA. Although SONA is also another example of convenience sampling, participants recruited may be more representative of the undergraduate population, particularly of the underclassmen population, because recruitment was from an introductory class. In addition, because all participants were undergraduate students, findings cannot be generalized to the public. Because participants were in an academic environment, they may be made more aware of their own biases. As recruitment occurred halfway into the semester, it is entirely possible that participants already learned about biases and were made more aware of them. Furthermore, older participants may have learned to become

more accepting and tolerate as their education may have served as a long-lasting intervention to challenge previously held attitudes and beliefs. As a result, both negative conscious and unconscious attitudes and beliefs may be lower than those that generally exist in the public.

In terms of study structure, all measures should have been counterbalanced to account for order effects. The results, both increases and decreases of biases measures, could have simply been due to order effects. Because the same implicit association tests were administered before and after the passage, post scores could be a result of practice. Providing a sample IAT test for participants to become acquainted with the directions may have minimized effects due to practice and familiarity. In regards to IAT tests, despite the acceptable psychometric nature of pen and paper IAT, computerized versions, using latent-response, can garner more accurate, automatic results. Pen and paper IAT may be more sensitive to the stimuli type, demonstrating more credibility when combined with verbal directions, which this study did not have (Lemm et. al., 2008). Although a formula was used to account for individual differences in response speed, unwanted artifacts could not be completely erased (Lemm et. al., 2008). Using computerized IAT is highly recommended.

In regards to using empathy as part of the intervention, this study was not able to establish empathy as a mediator. Because the empathy manipulation check on the two interventions was not significant, there is a need to ensure that empathy-induction was strong enough in future studies (Teachman, Gapinski, Brownell & Rawlins, 2003). In

regards to the bias survey measures, the positive correlation between scores used to measure reported attitude (ATOP) and scores used to measure reported beliefs (BAOP) does not reveal whether having positive attitudes causes positive beliefs, or vice versa. Although it appears that beliefs are easier to modify, whether attitudes or beliefs are more predictive of discriminatory behaviors is unknown (Batson, Chang, Orr & Rowland, 2002). This study did not measure real-life discriminatory behaviors; as a result, it is unknown whether those who expressed more biases treat overweight and obese people differently than those who expressed less biases. Future research incorporating real life stimulations to observe accurate biased beliefs and attitudes may provide more revealing results.

Future Studies

Perhaps future interventions should focus on a different approaches and theories. Exploring additional individual differences can be revealing and may lead to how certain stereotype attitudes and beliefs form. This present study only focused on individual differences in empathy. It is possible that other factors are more important than empathy. For example, asking participants whether they have close friends and family members who are overweight and obese can be useful in determining why people differ in bias scores and endorsements. According to Chambliss et al. (2004), people who have or have had positive relationships with people who are overweight and obese expressed lower conscious biases. Participants who had lower baseline levels of negative biases may simply have had more positive interactions and friendships that helped dispel stereotypes.

It may therefore be advisable to use intergroup contact theory, as the frequency and favorability of interactions seem to be powerful predictors for the creation and maintenance of positive intergroup attitudes (Burke et al., 2015).

Furthermore, interventions can introduce positive attributes of highly accomplished people, who are overweight and obese, by providing examples of people counteracting pervasive stereotypes. Although the present study attempted to do a variation of this in the personal story passage, it seems that telling people that the person is not lazy was not necessarily strong enough. This may mean that the targeted stereotype, laziness, may not be the most, significant negative belief individuals have toward obese and overweight people. Perhaps the attitude that fat is bad is so overwhelming embedded that targeting the motivated/lazy belief is not as helpful. Priming participants with positive stereotypes can be promising, although it is important, that in doing so, biases against thin people are not created and magnified. Perhaps these positive stereotypes could target negative attitudes (good vs. bad) than beliefs (motivated vs. lazy). A similar approach has been used in reducing racial and gender biases (Dasgupta & Greenwald, 2001). Future interventions could also focus on sustaining any belief or attitude changes. The present study was only testing immediate, short-term changes. Conducting a longitudinal study, with a variety of interventions dispersed throughout the study time, may be more helpful.

In regards to the integration of empathy research, while Perspective Taking and Empathetic Concern have been shown to be important in the creation of positive

intergroup attitudes, it is important to note that focusing too much on these dimensions can led to an opposite effect. Focusing too much on both trait and state empathy induction can actually lead to participants feeling greater anxiety and thus, become more susceptible to social desirability effects (Vorauer & Sasaki, 2009). Interventions that emphasize adopting the perspective of the marginalized group may have unintended counter consequences. Perhaps the story passage, in the present study, was too obvious in attempting to get the participants to feel empathetic towards the character.

Theoretical Implications

Due to the mixed findings of weight-stigma intervention research, many researchers have suggested that weight stigma is resistant to any singular, one-dimensional intervention. Many studies have suggested that weight stigma, encompassing both conscious and unconscious attitudes and beliefs, may be more resistant to change than previously thought. Weight stigma also seems to be resistant to interventions that involve empathy induction. The past interventions that have been effective all involved more than a news article or personal story. They included a visual component, a debriefing discussion, and often a positive interaction with people who are overweight and obese (Poustchi, et al., 2013). Puhl & Heuer (2009) expresses that a multidimensional and longitudinal approach may be needed to reduce such a highly persistent and strong problem. Theoretically speaking, bias intervention reduction techniques used for racial, religious, and gender biases may not work on weight stigma. Interventions on these biases often focus on one construct (e.g. attempting to disassociate

math ability with males). The passages created and used in this study used the same approach and primarily focused on one important idea: changing the belief of controllability, and in doing so, the negative attitude associated with laziness. However, a fresh approach in creating interventions, without relying on techniques used to reduce other weaker biases, is needed.

Furthermore, the studies that have successfully reduced negative beliefs and attitudes need to be verified to see if the correct constructs were measured. One study was able to reduce the endorsement of stereotypes, but discovered that reducing stigma was not possible (Weise, Wilson, Jones & Neises, 1992). In other words, the study was able to persuade participants that their attitudes and beliefs were incorrect. However, participants did not necessarily stop believing in these incorrect attitudes and beliefs.

Practical Applications

The results of this study, and future studies, can be used to aid and tailor the style and approach of educational passages in addressing stigmatizing characteristics in ways that not only reduce the reinforcement of negative attitudes and beliefs, but also actually mitigate stigma. Long-term curriculum integrating interventions can be useful (Burke et al., 2005). Computer stimulation research has shown that even small amounts of biases can adversely affect people and institutions (Martell, Lane & Emrich, 1996). As a result, even small reductions in the expression of biased attitudes and beliefs are important and have real consequences. This study's findings shed some hopeful light that, no matter how small the reductions, decreasing biases was possible. To see if, in fact, the

interventions played an important role, conducting a similar study with stronger interventions may be the next step.

Furthermore, directly informing participants of their negative biases upon completion of the study may provide awareness of the participants' existing views. This information may allow participants to self-reflect and reevaluate why they have certain viewpoints. Perhaps directly telling participants to engage in self-reflection may prompt them to activate their memories, which hold strongly held attitudes. Knowing the reason behind negative biases not only can help create effective interventions, but could also allow participants to feel more empowered to change them. Why people may have certain attitudes and beliefs was not directly studied in the present study; the study only examined the strength of existing stereotypical attitudes and beliefs. Knowing the magnitude of one's own biases may be the first step to reducing them.

Conclusions

Reducing already existing explicit and implicit biases seem to be extremely difficult as shown through this present study and past studies. Instead of focusing on mitigating already existing problems, not creating these problems in the first place may be incredibly important. Furthermore, the effectiveness of interventions seems to vary from person to person due to factors like trait empathy. No one type of intervention seems to be the most effective; each intervention should be personalized to fit the needs of an individual. Through more extensive research, we are hopeful that more generalized, effective interventions can be implemented in various educational curriculums.

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Table 1.

Demographic Data of Reported Participants

97 Total Participants

		Frequency	Percent
Undergraduate Level			
	Freshman	24	24.70%
	Sophomore	23	23.70%
	Junior	15	15.50%
	Senior	16	16.50%
	Super Senior	19	19.60%
Age Range			
	18-20	57	58.80%
	21-23	39	40.21%
	24+	1	1.03%
Gender			
	Female	71	72.40%
	Male	27	27.60%
Race			
	Cauasian/White	37	38.10%
	African American/Black	9	9.30%
	Hispanic/Latino	10	10.30%
	Asian	36	37.10%
	Other	3	3.16%

Note: Numbers may not add up to the total due to missing or incomplete data

Table 2.

Correlations between Pre-Interventions Explicit and Implicit Measures of Bias and Sample Sizes

Variable	1	2	3	4	5	N
1. AFAT		-.494**	-.578**	0.033	0.03	94
2. BAOP			.422**	0.026	0.004	94
3. ATOP				-0.052	-0.111	87
4. Implicit Good/Bad					0.034	92
5. Implicit Motivated/Lazy						92

Abbreviations: AFAT, Antifat Attitudes Test; BAOP, Beliefs about Obese Persons Scale; ATOP, Attitudes Toward Obese Persons Scale

*$p < 0.05$

**$p < 0.01$

Table 3.

Correlations between Post-Interventions Explicit and Implicit Measures of Bias and Sample Sizes

Variable	1	2	3	4	5	N
1. AFAT		-.408**	-.582**	0.012	0.2	92
2. BAOP			.443**	-0.034	-0.124	90
3. ATOP				-0.053	-.220*	88
4. Implicit Good/Bad					.438**	87
5. Implicit Motivated/Lazy						87

Abbreviations: AFAT, Antifat Attitudes Test; BAOP, Beliefs about Obese Persons Scale; ATOP, Attitudes Toward Obese Persons Scale

*$p < 0.05$

**$p < 0.01$

Table 4.

Correlations between IRI Subscales and State Empathy

Variable	1	2	3	4	5
1. PT		0.184	.488**	-.310**	0.116
2. FS			.221*	.343**	.309**
3. EC				0.056	.290**
4. PD					.274**
5. State Empathy					

Abbreviations: PT, Perspective Taking; F, Fantasy;
EC, Empathetic Concern; PD, Personal Distres

*$p < 0.05$
**$p < 0.01$

Table 5.

Empathy Measurements

Dispositional Empathy Levels												
	Subscales											
	Perspective Taking (PT)			Fantasy (F)			Empathic Concern (EC)			Personal Distress (PD)		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Factual	19.2	4.98	45	19.18	4.49	45	20.24	3.95	41	11.98	4.73	45
Vignette	18.43	4.79	47	17.45	4.92	44	19.42	4.02	45	12.15	5.24	46

State Empathy			
	Mean	SD	N
Factual	31.41	8.15	44
Vignette	32.91	9.74	46

Table 6.

Pre and Post Intervention Explicit Bias Measures

Measure	Pre		N	Post		N
	Mean	SD		Mean	SD	
Factual Condition						
Anti-Fat Attitudes Test (AFAT)	63.36	15.58	45	62.82	16.23	45
Beliefs about Obese Persons Scale (BAOP)	18.86	7.28	44	21.57	7.67	44
Attitudes Toward Obese Persons (ATOP)	64.93	15.01	41	67.42	15.42	43
Vignette Condition						
Anti-Fat Attitudes Test (AFAT)	68.13	19.49	45	68.3	24.08	46
Beliefs about Obese Persons Scale (BAOP)	18.4	6.85	47	22.49	7.64	45
Attitudes Toward Obese Persons (ATOP)	61.89	18.84	44	64.7	17.42	44

Note: Ns may differ due to missing data

Table 7.

Pre and Post Intervention Implicit Bias Measures

Measure	Pre		N	Post		N
	Mean	SD		Mean	SD	
Factual Condition						
Good vs Bad IAT	2.81	3.52	44	3.36	3.83	42
Motivated vs Lazy IAT	2.59	2.11	44	2.44	2.74	42
Vignette Condition						
Good vs Bad IAT	1.67	3.72	45	3.35	4.47	44
Motivated vs Lazy IAT	2.81	4.73	46	2.2	3.65	44

Note: Ns may differ due to missing data

Table 8.

Pre and Post Intervention Explicit and Implicit Bias Measures Relative to Gender

Measure	Pre		N	Post		N
	Mean	SD		Mean	SD	
Females						
Anti-Fat Attitudes Test (AFAT)	63.36	16.39	69	61.71	18.87	65
Beliefs about Obese Persons Scale (BAOP)	18.49	6.82	68	22.13	7.26	63
Attitudes Toward Obese Persons (ATOP)	64.7	18.99	60	68.4	17.25	62
Good vs Bad IAT	2.32	3.75	65	3.14	3.92	62
Motivated vs Lazy IAT	2.4	2.65	65	2.27	3.32	62
Males						
Anti-Fat Attitudes Test (AFAT)	72.4	19.1	25	74.56	21.97	27
Beliefs about Obese Persons Scale (BAOP)	18.58	7.59	26	21.63	8.48	27
Attitudes Toward Obese Persons (ATOP)	59.11	11.67	27	60.12	12.4	26
Good vs Bad IAT	1.86	3.31	27	3.92	4.62	25
Motivated vs Lazy IAT	3.37	5.34	27	2.43	2.97	25

Note: Ns may differ due to missing data

Table 9.

Dispositional Empathy Relative to Gender

Gender	IRI											
	Perspective Taking (PT)			Fantasy (FS)			Empathic Concern (EC)			Personal Distress (PD)		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Female	18.54	4.47	70	18.25	4.97	68	19.88	3.9	65	12.55	4.59	69
Male	19.44	5.59	27	18.76	4.32	26	19.65	4.14	26	10.89	5.69	27

Means and standard deviations are shown.

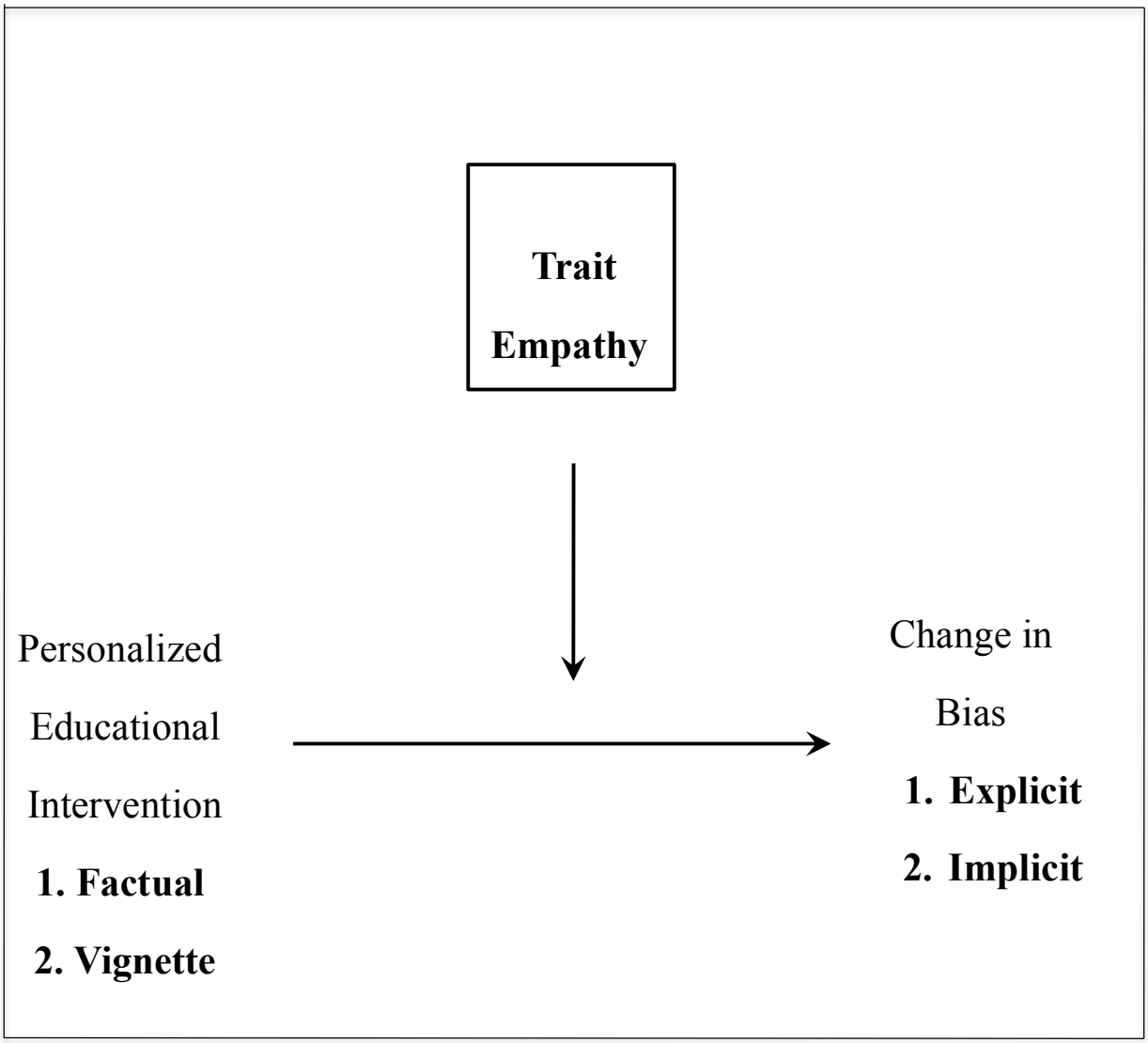

Figure 1. Integrative model of the role of trait empathy in moderating the association between the type of personalized educational interventions and the change in biases

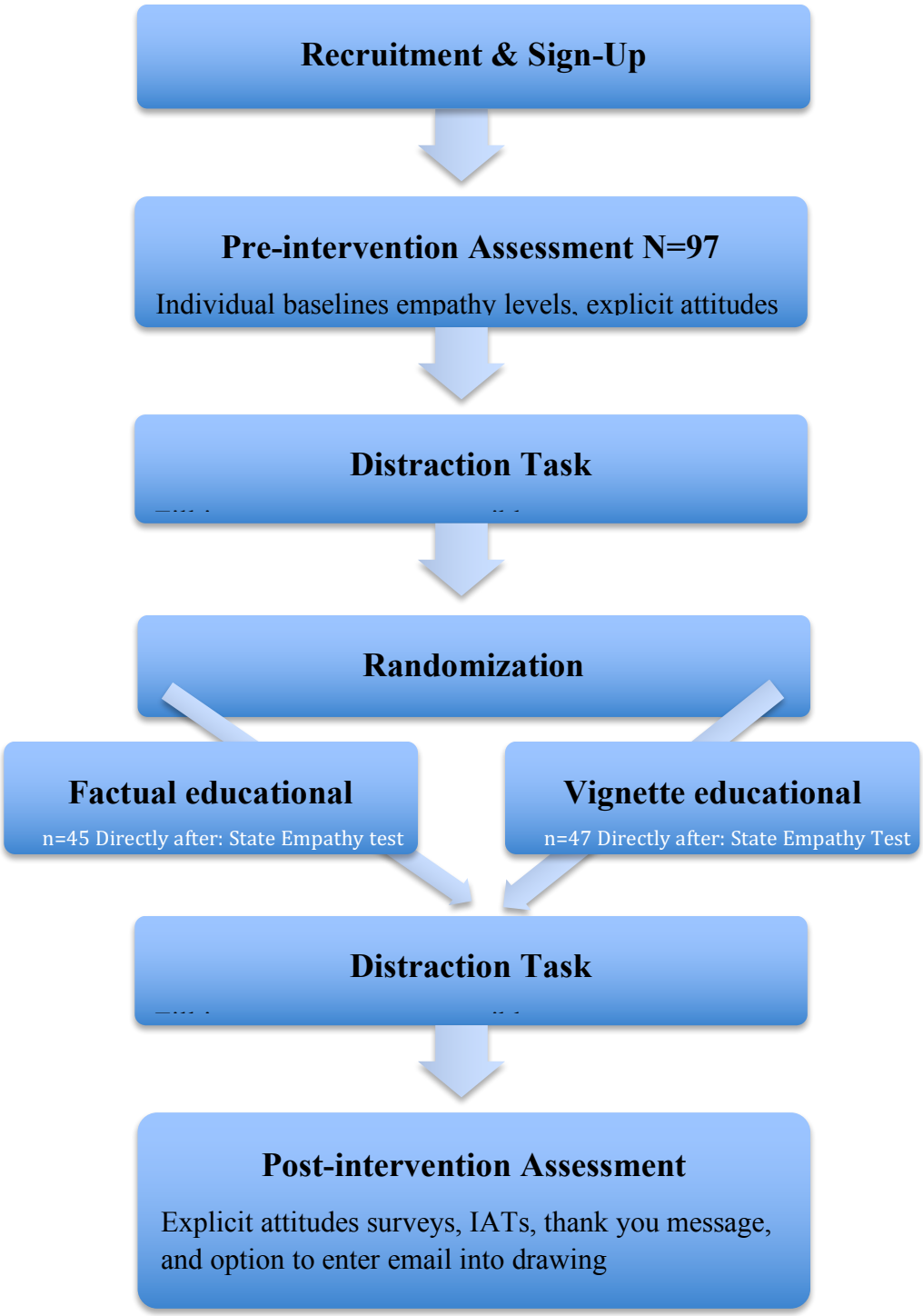

Figure 2. Study Design & Participant Flow

Participants followed this flow chart to complete the online, Qualtrics study.

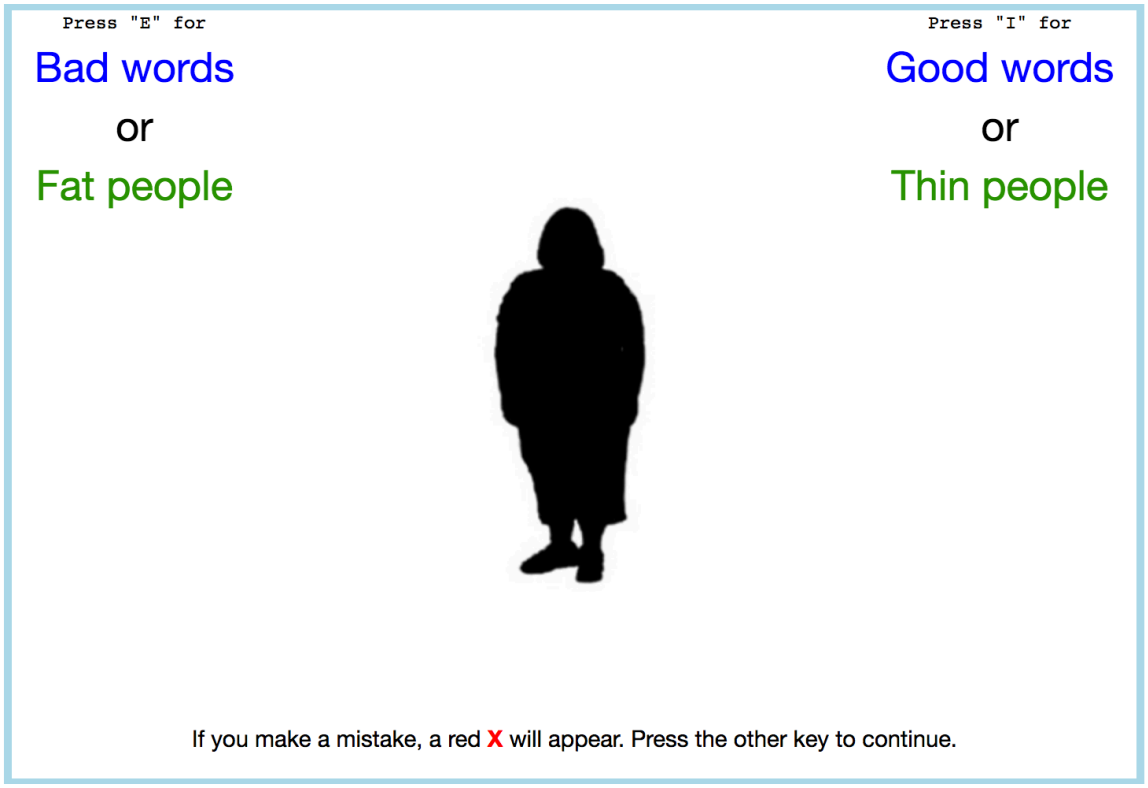

Figure 3. A picture of the computerized IAT test. Computerized IAT tests use response latency to measure the strength of association between adjectives. In this test, users are not asked to make a judgment call; they are simply asked to press the correct key "E" or "I" when the stimulus in the middle matches the descriptors of either "E" or "I." In this case, users who pressed "E" would be correct, regardless of whether they personally believed that Fat People were Good or Bad.

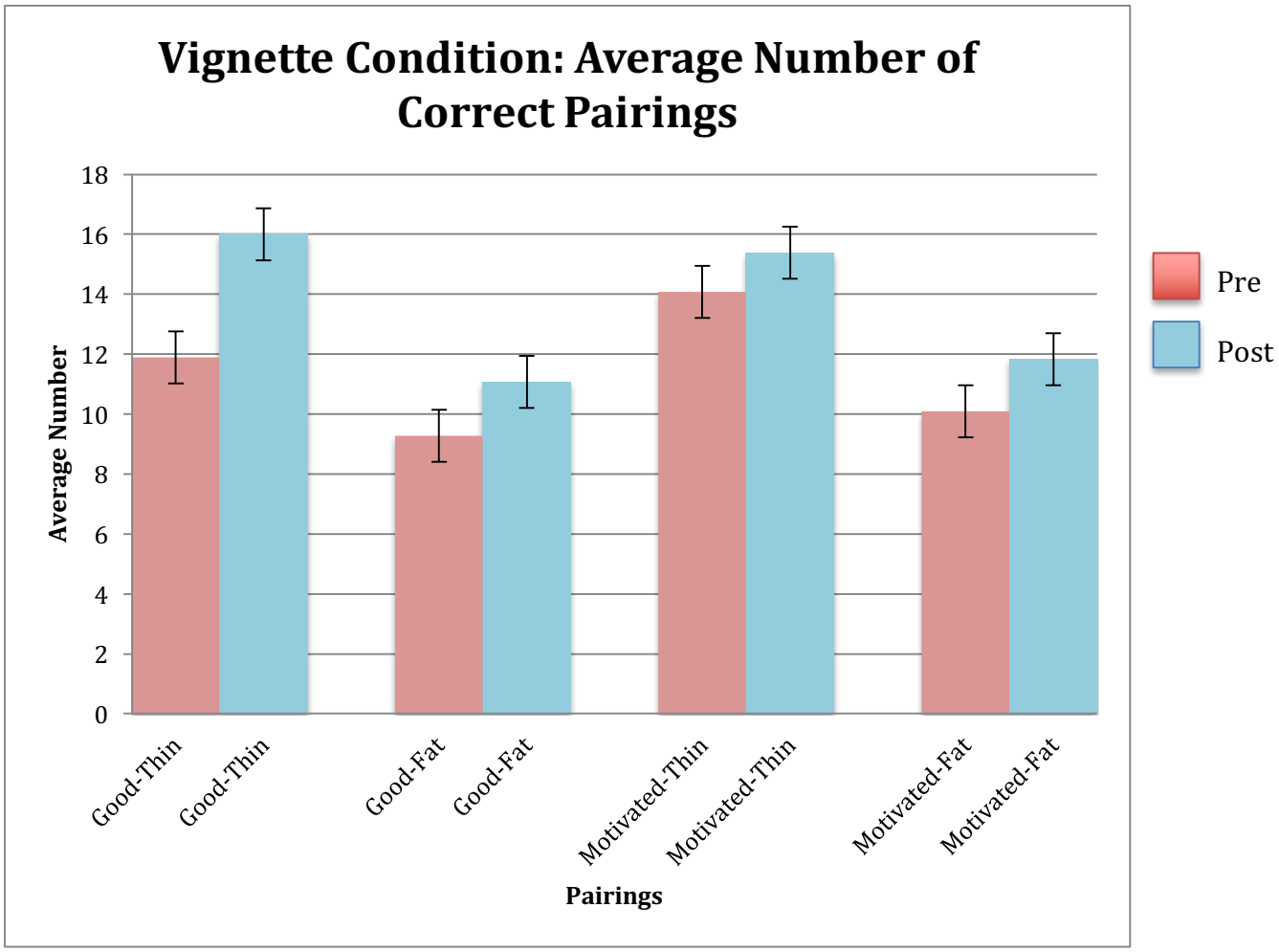

Figure 4. The average number of correct word association pairings was used to calculate implicit bias scores using the formula: (X/Y)* ($\sqrt{X-Y}$), where X represents the greater numerical value of A or B and Y represents the smaller (Lemm et al., 2007). The number of accurate pairings increased pre to post vignette condition.

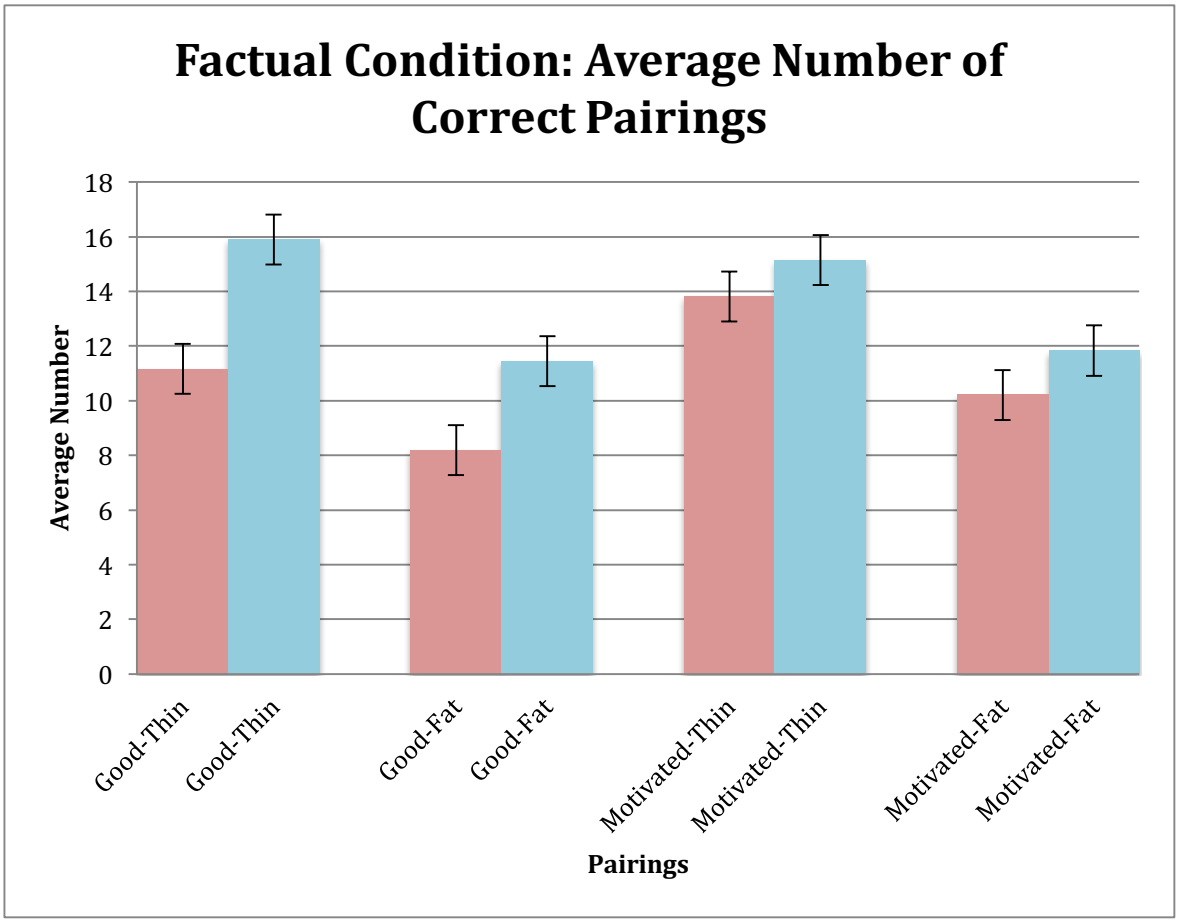

Figure 5. The average number of correct word association pairings was used to calculate implicit bias scores using the formula: (X/Y)* ($\sqrt{X-Y}$), where X represents the greater numerical value of A or B and Y represents the smaller (Lemm et al., 2007). The number of accurate pairings increased pre to post factual condition.

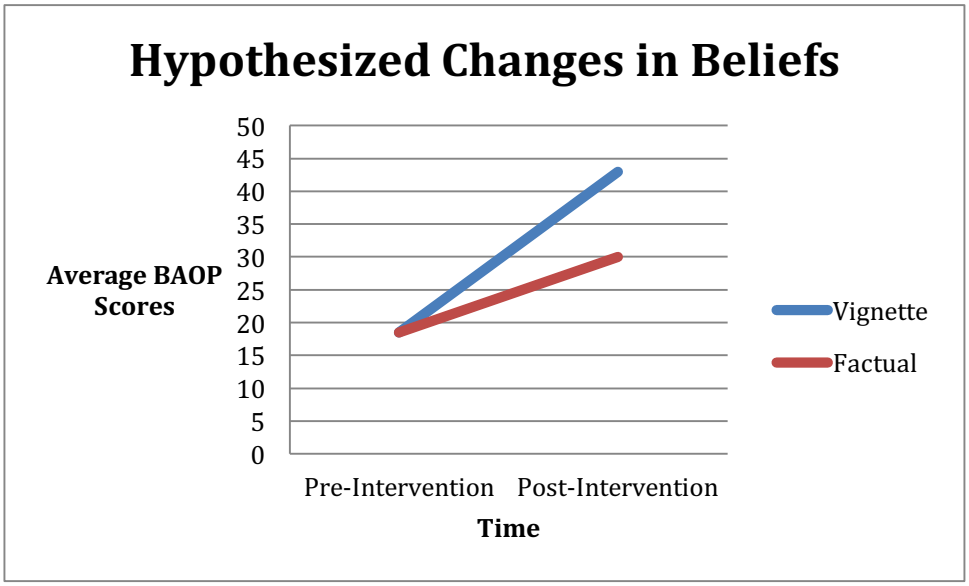

Figure 6. Line graph representing the hypothesized results for this study. Individuals, in both the vignette and factual groups, were predicting to have same baseline scores. This means that baseline negative beliefs that people have toward weight should be similar at the pre-intervention, regardless of the condition they were randomly assigned. Individuals assigned to the vignette condition were predicted to have an increase in BAOP scores, that is, a decrease in negative beliefs. Increasing BAOP scores signify decreasing negative beliefs.

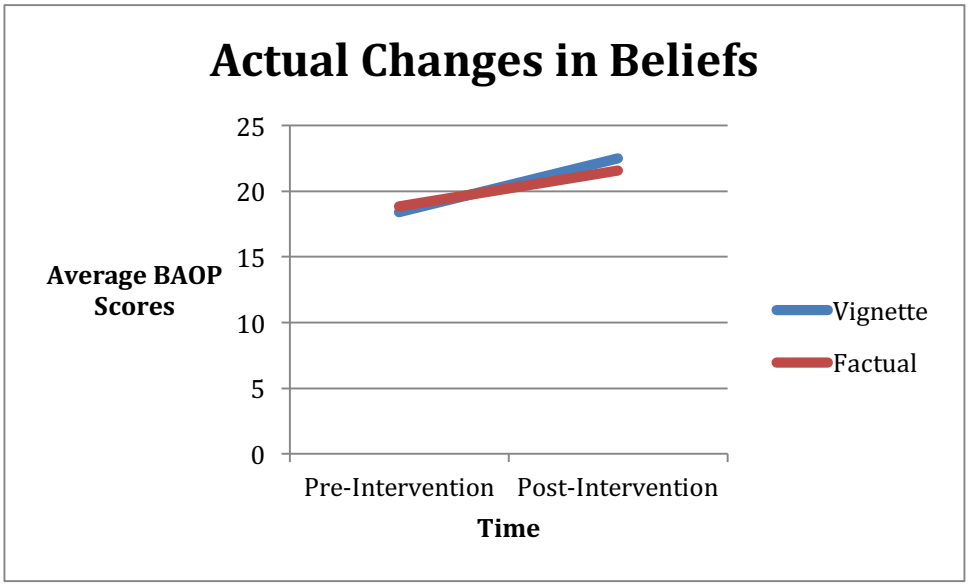

Figure 7. Line graph representing the actual results of the study. The changes in beliefs were not significantly different between conditions.

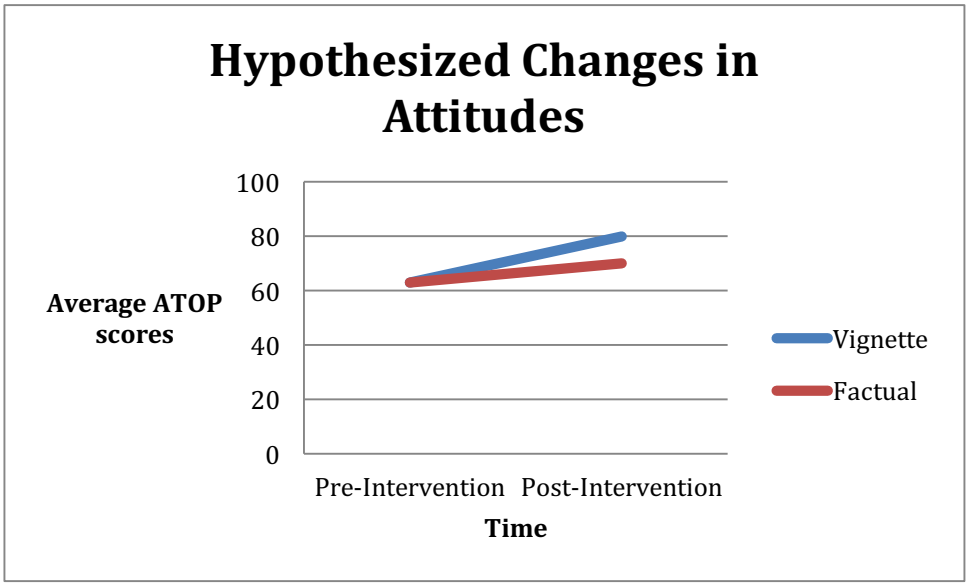

Figure 8. Line graph representing the hypothesized results for this study. Individuals, in both the vignette and factual groups, were predicting to have same baseline scores. This means that baseline negative attitudes that people have toward weight should be similar at the pre-intervention, regardless of the condition they were randomly assigned. Individuals assigned to the vignette condition were predicted to have increase in ATOP scores, that is, a decrease in negative attitudes. Increasing attitudes scores signify decreasing negative beliefs. The change is attitude scores, however, were not predicted to be as great as the changes in belief scores.

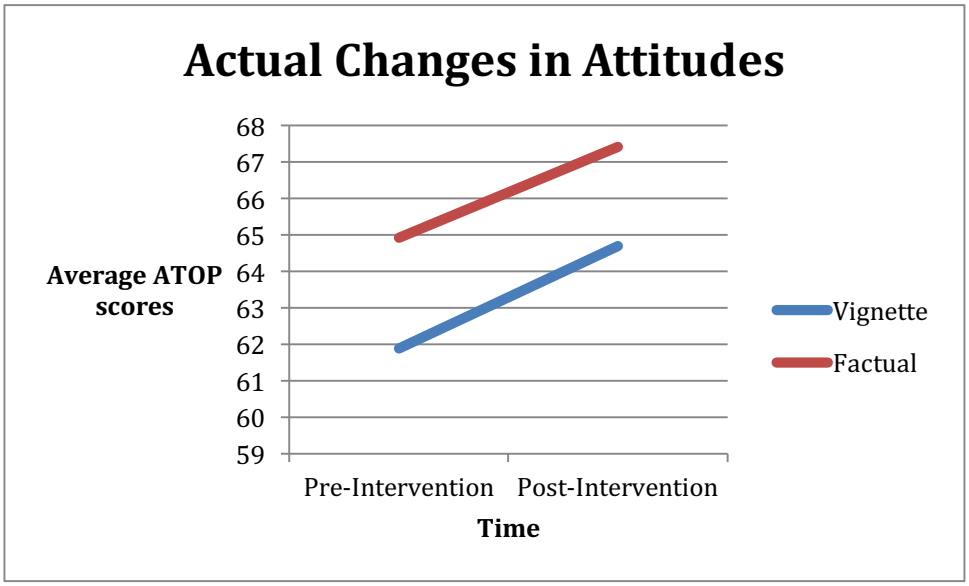

Figure 9. Line graph representing the actual results of the study. The changes in attitudes were not significantly different between conditions. Although it appears that those in the factual condition saw a significant increase in ATOP scores, and thus a greater reduction in negative attitudes, this was not the case. Although not significant, those in the vignette condition saw a greater increase in ATOP scores than those in the factual conditions. In addition, participants randomly assigned to the factual condition expressed more negative attitudes at baseline.

Appendix A: IRB Approval Letter

OFFICE OF RESEARCH SUPPORT

THE UNIVERSITY OF TEXAS AT AUSTIN

P.O. Box 7426, Austin, Texas 78713 · Mail Code A3200
(512) 471-8871 · FAX (512) 471-8873

FWA # 00002030

Date: 10/07/16

PI: Young-Jee Jung

Dept: Psychology

Title: Effectiveness of Two Different Educational Methods in Changing Attitudes

Re: IRB Expedited Approval for Protocol Number 2016-08-0039

Dear Young-Jee Jung:

In accordance with the Federal Regulations the Institutional Review Board (IRB) reviewed the above referenced research study and found it met the requirements for approval under the Expedited category noted below for the following period of time: 10/07/2016 to 10/06/2017. *Expires 12 a.m. [midnight] of this date.* If the research will be conducted at more than one site, you may initiate research at any site from which you have a letter granting you permission to conduct the research. You should retain a copy of the letter in your files.

Expedited category of approval:

☐ 1) Clinical studies of drugs and medical devices only when condition (a) or (b) is met. (a) Research on drugs for which an investigational new drug application (21 CFR Part 312) is not required. (Note: Research on marketed drugs that significantly increases the risks or decreases the acceptability of the risks associated with the use of the product is not eligible for expedited review). (b) Research on medical devices for which (i) an investigational device exemption application (21 CFR Part 812) is not required; or (ii) the medical device is cleared/approved for marketing and the medical device is being used in accordance with its cleared/approved labeling.

☐ 2) Collection of blood samples by finger stick, heel stick, ear stick, or venipuncture as follows: (a) from healthy, non-pregnant adults who weigh at least 110 pounds. For these subjects, the amounts drawn may not exceed 550 ml in an 8 week period and collection may not occur more frequently than 2 times per week; or (b) from other adults and children2, considering the age, weight, and health of the subjects, the collection procedure, the amount of blood to be collected, and the frequency with which it will be collected. For these subjects, the amount drawn may not exceed the lesser of 50 ml or 3 ml per kg in an 8 week period and collection may not occur more frequently than 2 times per week.

☐ 3) Prospective collection of biological specimens for research purposes by non-invasive means. Examples:

(a) Hair and nail clippings in a non-disfiguring manner.
(b) Deciduous teeth at time of exfoliation or if routine patient care indicates a need for extraction;
(c) Permanent teeth if routine patient care indicates a need for extraction.

(d) Excreta and external secretions (including sweat).
(e) Uncannulated saliva collected either in an un-stimulated fashion or stimulated by chewing gumbase or wax or by applying a dilute citric solution to the tongue.
(f) Placenta removed at delivery.
(g) Amniotic fluid obtained at the time of rupture of the membrane prior to or during labor.
(h) Supra- and subgingival dental plaque and calculus, provided the collection procedure is not more invasive than routine prophylactic scaling of the teeth and the process is accomplished in accordance with accepted prophylactic techniques.
(i) Mucosal and skin cells collected by buccal scraping or swab, skin swab, or mouth washings.
(j) Sputum collected after saline mist nebulization.

☐ 4) Collection of data through non-invasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves. Where medical devices are employed, they must be cleared/approved for marketing. (Studies intended to evaluate the safety and effectiveness of the medical device are not generally eligible for expedited review, including studies of cleared medical devices for new indications).
Examples:
(a) Physical sensors that are applied either to the surface of the body or at a distance and do not involve input of significant amounts of energy into the subject or an invasion of the subject's privacy.
(b) Weighing or testing sensory acuity.
(c) Magnetic resonance imaging.
(d) Electrocardiography, electroencephalography, thermography, detection of naturally occurring radioactivity, electroretinography, ultrasound, diagnostic infrared imaging, doppler blood flow, and echocardiography.
(e) Moderate exercise, muscular strength testing, body composition assessment, and flexibility testing where appropriate given the age, weight, and health of the individual.

☐ 5) Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for non-research purposes (such as medical treatment or diagnosis).
Note: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(4). This listing refers only to research that is not exempt.

☐ 6) Collection of data from voice, video, digital, or image recordings made for research purposes.

☒ 7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.
Note: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.

☒ Use the attached approved informed consent document(s).

☒ You have been granted a Waiver of Documentation of Consent according to 45 CFR 46.117 and/or 21 CFR 56.109(c)(1).

☐ You have been granted a Waiver of Informed Consent according to 45 CFR 46.116(d).

Responsibilities of the Principal Investigator:

1. Report immediately to the IRB any unanticipated problems.

2. Submit for review and approval by the IRB all modifications to the protocol or consent form(s). Ensure the proposed changes in the approved research are not applied without prior IRB review and approval, except when necessary to eliminate apparent immediate hazards to the subject. Changes in approved research implemented without IRB review and approval initiated to eliminate apparent immediate hazards to the subject must be promptly reported to the IRB, and will be reviewed under the unanticipated problems policy to determine whether the change was consistent with ensuring the subjects continued welfare.

3. Report any significant findings that become known in the course of the research that might affect the willingness of subjects to continue to participate.

4. Ensure that only persons formally approved by the IRB enroll subjects.

5. Use only a currently approved consent form, if applicable.
   Note: Approval periods are for 12 months or less.

6. Protect the confidentiality of all persons and personally identifiable data, and train your staff and collaborators on policies and procedures for ensuring the privacy and confidentiality of subjects and their information.

7. Submit a Continuing Review Application for continuing review by the IRB. Federal regulations require IRB review of on-going projects no less than once a year a reminder letter will be sent to you two months before your expiration date. If a reminder is not received from Office of Research Support (ORS) about your upcoming continuing review, it is still the primary responsibility of the Principal Investigator not to conduct research activities on or after the expiration date. The Continuing Review Application must be submitted, reviewed and approved, before the expiration date.

8. Upon completion of the research study, a Closure Report must be submitted to the ORS.

9. Include the IRB study number on all future correspondence relating to this protocol.

If you have any questions contact the ORS by phone at (512) 471-8871 or via e-mail at orsc@uts.cc.utexas.edu.

Sincerely,

James P. Wilson

James Wilson, Ph.D.
Institutional Review Board Chair

Appendix B: IRB Internet Research Consent Form Letter

IRB USE ONLY
Study Number: 2016-08-0039
Approval Date: 10/07/2016
Expires: 10/06/2017

Consent to Participate in Internet Research

Identification of Investigator and Purpose of Study

You are invited to participate in a research study, entitled **"Effectiveness of two different educational methods in changing attitudes."** The study is being conducted by **Young-Jee Jung** of The University of Texas at Austin **and can be reached at yjeejung@gmail or educational.style.study@gmail.com and at the following phone number: 512-535-8178**.

The purpose of this research study is to examine **what style of personalized educational method is effective in modifying attitudes.** Your participation in the study will contribute to a better understanding of **modifying both implicitly and explicitly held attitudes towards certain conditions.** You are free to contact the investigator at the above address or phone number to discuss the study. You must be at least 18 years old to participate and not older than 30 years old.

If you agree to participate:

- The **online Qualtrics study** will take approximately **30 minutes** of your time.
- You will complete an activity about **self-reporting your attitudes and feelings regarding a certain topic. There are 14 activities to complete. These activities consist of completing surveys and reading an educational excerpt on the subject.**
- You **will not** be **monetarily** compensated. **If you are enrolled in Psychology 301, you can receive research credit for PSY 301 equal to the duration of your involvement (0.5).** PSY 301 participants will be granted automatic credit upon completion of the study through SONA. The SONA system will assign a random, unique numeric ID code for each participant, which is passed to the Qualtrics survey when the participants click on the survey link via SONA. When they reach the end of the study, Qualtrics will redirect the participant back to the SONA site with the ID code. This ID code is used to grant automatic credit and is a random number between the two systems. Those seeking PSY 301 credit, must access the study through SONA.
- **If you are not a PSY 301 student, you have the option to be entered into a drawing for one of two $25 electronic Amazon giftcards upon completion of the study. To enter the drawing, please email the PI and include your completion code upon completion of the study. No one person will be rewarded both giftcards. You will be responsible for any possible taxes assessed on the compensation.** When you complete the study, you will be given a completion code. You will be instructed to keep this code and email the PI to enter the drawing for one of two giftcards. In the email, participants will need the completion code for proof. No one person will be rewarded both electronic gift cards. The principal investigator will draw two participants' numbers through a random number generator and contact the drawn participants. Electronic giftcard codes will be emailed to these two participants. No other form of compensation will be provided.

Risks/Benefits/Confidentiality of Data

There are **possible risks of discomfort that could cause you to feel uncomfortable, embarrassed, sad, tired, etc. You are allowed to skip questions should you desire to do so.** There will be no costs for participating, nor will you benefit from participating. There is no way to identify you. You will receive a completion code at the end of the study. Please keep this code and email the PI to enter the drawing for one of two Amazon electronic giftcards. If you are seeking PSY 301 credit, you will automatically be granted credit through SONA. This method will allow that no identifiable information can be linked to any study data at any point. You will be reminded of this procedure at the end of the study. If you win the drawing, an electronic giftcard code will be sent to your email. After the drawing, all emails will be permanently destroyed. If you do not receive an email with the giftcard code, you did not win the drawing. Only the principal investigator and the faculty supervisors (3) will have access to the data. Data collected from Qualtrics will be analyzed in SPSS and data will be stored on the principal investigator's password protected computer. **Identifying information (in this case: optionally emailing the PI will be destroyed after winners have been contacted.)**

Participation or Withdrawal

Your participation in this study is voluntary. You may decline to answer any question and you have the right to withdraw from participation at any time. Withdrawal will not affect your relationship with The University of Texas in anyway. If you do not want to participate either simply stop participating or close the browser window.

You will only be contacted by email, by educational.style.study@gmail.com, if you are randomly drawn to be the winner of one of two $25 electronic Amazon giftcards.

Contacts

If you have any questions about the study or need to update your email address contact the researcher **Young-Jee Jung** at **512-535-8178** or send an email to **yjeejung@gmail.com.** This study has been reviewed by The University of Texas at Austin Institutional Review Board and the study number is **2016080039.**

Questions about your rights as a research participant.
If you have questions about your rights or are dissatisfied at any time with any part of this study, you can contact, anonymously if you wish, the Institutional Review Board by phone at (512) 471-8871 or email at orsc@uts.cc.utexas.edu.

Thank you.

Please print a copy of this document for your records.

The University of Texas at Austin
CONSENT TO PARTICIPATE IN INTERNET RESEARCH

Appendix C: Instructions and Directions

1. **Recruitment & Step-Up Instructions**
2. **Pre-intervention Assessments Instructions:** Carefully read the instructions and answer choice options for each survey. Each activity will begin with brief instructions. (See Appendix B: Measures)
3. **Distraction Task Instructions:** You will be given 5 minutes to list as many states as possible.
4. **Randomization:**
    a. The participants will be randomized into the Factual Educational Intervention method or the Vignette Educational Intervention.
5. **Intervention Instructions:**
    a. **Factual Educational Intervention:** Please read the recently published scientific article regarding the complex nature of obesity. As you read, stay as objective as possible. After reading the article, truthfully answer the questions immediately after.
    b. **Vignette Educational Intervention:** Please read the first-person account of Laura as she recounts her experiences regarding her weight and the way that people have treated her because of it. As you read, pay attention to your own feelings. After reading the account, truthfully answer the questions immediately after.

Distraction Task Instructions: You will be given 5 minutes to list as many countries as possible.

6. **Post-Intervention Assessment:** Carefully read the instructions and answer choice options for each survey. Each activity will begin with brief instructions. (See Appendix B: Measures)
    a. Post-intervention assessment includes all pre-intervention assessments measures except that the Interpersonal Reactivity Index is exchanged for the State Empathy Scale. However, the State Empathy Scale will be taken immediately after the intervention.

Appendix D: Thesis Participants Recruitment Language

Note to IRB: I provided an email template in case people who email me with interest or questions. If they are questions about how to participate, I will simply send the email content below. However, I do not expect to have to email interested participants because the study link is easily accessible.

Email to be sent after participants express interest in the study:

Hello,

You are receiving this email because you have expressed interested in participating in the educational style study that intends to explore the effectiveness of different educational methods in changing attitudes. This is a study for an undergraduate thesis. Your participation will be completely online. *This study is trying to learn more about the way attitudes can be modified through different educational interventions.* The study involves completing a total of 14 online activities, including self-reported surveys, a reading passage, and two implicit-association tests.

The study must be finished in one sitting. All together, your involvement will last approximately 30 minutes. If you choose to participate, you will receive either credit towards your PSY 301 research hours equal to the duration of your involvement (0.5). If you are not a PSY 301 student, and do not require credit, you have the option to be entered into a drawing for one of two $25 electronic Amazon giftcards.

If you have any questions about this study or are interested in participating, please email YoungJee Jung at **educational.style.study@gmail.com**, or call (512) ***-****.

Thank you very much.

Know Events:

Educational method in modifying attitudes study seeks participants
Description: Qualtrics study for undergraduate thesis. The study examines what style of personalized educational method is effective in modifying attitudes. You must be 18 or older and proficient in English. Contact Youngjee at **educational.style.study@gmail.com** if you have questions.
Time: All-day online study
Location: Online
Admission: Free; PSY 301 students will receive credit (0.5). Non-PSY 301 students will have the option to be entered into a drawing for one of two $25 electronic Amazon giftcards. All together, your

involvement will last approximately 30 minutes. If you want PSY 301 credit, please access the Qualtrics link through SON

Facebook post #1:

Hi guys, I'm running a study for my thesis and I'm looking for college students willing to participate. The study examines what style of personalized educational method is effective in modifying attitudes. The study is all online, through Qualtrics, and includes a bunch of self-reported surveys, a reading passage, and an implicit-association test.

To participate: You have to be 1) proficient in English, 2) be 18-30 years old, and 3) a college student.

The study should take approximately 30 minutes. If you choose to participate, you will receive credit towards your PSY 301 research hours equal to the duration of your involvement (0.5). If you want PSY 301 credit, please access the Qualtrics link through SONA. If you are not a PSY 301 student, and do not require credit, you have the option to be entered into a drawing for one of two $25 electronic Amazon giftcards upon completion of the study.
If you have any questions, please contact me at **educational.style.study@gmail.com** or 512-***-****.
Please click on the Qualtrics link to start the study. Thank you so much!

Facebook post #2:

Chance to win one of two Amazon $25 gift card or earn Psych 301 research credit (0.5)! If you want PSY 301 credit, please access the Qualtrics link through SONA. My study, for my Psychology thesis, is all through Qualtrics. The study examines what style of personalized educational method is effective in modifying attitudes. Please click on the Qualtrics link to start the study. If you have any questions, please contact me at **educational.style.study@gmail.com** or 512-***-****.

SONA:

This educational style study intends to explore the effectiveness of different educational methods in changing attitudes. This is a study for an undergraduate thesis. Your participation will be completely online. *This study is trying to learn more about the way attitudes can be modified through different educational interventions.* The study involves completing a total of 14 online activities, including self-reported surveys, a reading passage, and two implicit-association tests.

The study is to be completed in one sitting and is expected to last approximately 30 minutes. Please click on the Qualtrics link to start the study. If you have any questions, please contact me at **educational.style.study@gmail.com** or 512-***-****. If you choose to participate, you will receive towards your PSY 301 research hours equal to the duration of your involvement (0.5).

Appendix E: Measures and Distraction Tasks

Order of measures used pre-intervention: A, B, C, D, E
Order of measures used post-intervention F, B, C, D, E
In between interventions: distractor tasks to reduce tiredness

Demographics Questions:

1. Age __
2. Gender ___
3. Year in Undergraduate:
4. Approximate weight:
5. Approximate height:
6. How many Implicit Association Tests (IATs) have you taken? 0, 1, 2, 3-5, 6+
7. Race:

Measure 1: Interpersonal Reactivity Index (IRI): To measure one's trait (dispositional) empathy levels

Reference:

Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *JSAS Catalog of Selected Documents in Psychology, 10*, 85.

Description of Measure:

28-items answered on a 5-point Likert scale ranging from "Does not describe me well" to "Describes me very well". The measure has 4 subscales, each made up of 7 different items. These subscales are (taken directly from Davis, 1983):

Perspective Taking – the tendency to spontaneously adopt the psychological point of view of others

Fantasy – taps respondents' tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, movies, and plays

Empathic Concern – assesses "other-oriented" feelings of sympathy and concern for unfortunate others

Personal Distress – measures "self-oriented" feelings of personal anxiety and unease in tense interpersonal settings

Scale (taken from mailer.fsu.edu/~cfigley/Tests/**IRI**.RTF)**:**

INTERPERSONAL REACTIVITY INDEX

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate letter on the scale : A, B, C, D, or E. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can. Thank you.

ANSWER SCALE:

A	B	C	D	E
DOES NOT DESCRIBE ME ME WELL				DESCRIBES VERY WELL

1. I daydream and fantasize, with some regularity, about things that might happen to me.

2. I often have tender, concerned feelings for people less fortunate than me.

3. I sometimes find it difficult to see things from the "other guy's" point of view.

4. Sometimes I don't feel very sorry for other people when they are having problems.

5. I really get involved with the feelings of the characters in a novel.

6. In emergency situations, I feel apprehensive and ill-at-ease.

7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.

8. I try to look at everybody's side of a disagreement before I make a decision.

9. When I see someone being taken advantage of, I feel kind of protective towards them.

10. I sometimes feel helpless when I am in the middle of a very emotional situation.

11. I sometimes try to understand my friends better by imagining how things look from their perspective.

12. Becoming extremely involved in a good book or movie is somewhat rare for me.

13. When I see someone get hurt, I tend to remain calm.

14. Other people's misfortunes do not usually disturb me a great deal.

15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.

16. After seeing a play or movie, I have felt as though I were one of the characters.

17. Being in a tense emotional situation scares me.

18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them.

19. I am usually pretty effective in dealing with emergencies.

20. I am often quite touched by things that I see happen.

21. I believe that there are two sides to every question and try to look at them both.

22. I would describe myself as a pretty soft-hearted person.

23. When I watch a good movie, I can very easily put myself in the place of a leading character.

24. I tend to lose control during emergencies.

25. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.

26. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me.

27. When I see someone who badly needs help in an emergency, I go to pieces.

28. Before criticizing somebody, I try to imagine how I would feel if I were in their place

Measure 2: Anti-Fat Attitudes Test (AFAT; Lewis, Cash, Jacobi, & Bubb-Lewis, 1997): used to measure explicit attitudes towards weight

Directions: For each statement, select the response option that corresponds to your opinion. 1=definitely disagree; 2=mostly disagree; 3=neither agree nor disagree; 4=mostly agree; 5=definitely agree

Social/Character Disparagement Subscale

1. If fat people don't get hired, it's their own fault.
2. Fat people don't care about anything except eating.
3. I'd lose respect for a friend who started getting fat.
4. Most fat people are boring.
5. Society is too tolerant of fat people.
6. When fat people exercise, they look ridiculous.
7. Fat people are just as competent in their work as anyone.
8. Being fat is sinful.
9. I prefer not to associate with fat people.
10. Most fat people are moody and hard to get along with.
11. If bad things happen to fat people, they deserve it.
12. Most fat people don't keep their surroundings neat and clean.
13. Society should respect the rights of fat people.
14. Fat people are unclean.
15. It's hard to take fat people seriously.

Physical/Romantic Unattractiveness Subscale

1. If I were single, I would date a fat person.
2. Fat people are physically unattractive.
3. Fat people shouldn't wear revealing clothing in public.
4. I can't believe someone of average weight would marry a fat person.
5. It's disgusting to see fat people eating.
6. It's hard not to stare at fat people because they are so unattractive.
7. I would not want to continue in a romantic relationship if my partner became fat.
8. I don't understand how someone could be sexually attracted to a fat person.
9. People who are fat have as much physical coordination as anyone.
10. Fat people should be encouraged to accept themselves the way they are.

Weight Control/Blame Subscale

1. There's no excuse for being fat.
2. Most fat people buy too much junk food.
3. Most fat people are lazy.
4. If fat people really wanted to lose weight, they could.
5. Fat people have no will power.
6. The idea that genetics causes people to be fat is just an excuse.
7. If fat people knew how bad they looked, they would lose weight.
8. Most fat people will latch onto almost any excuse for being fat.
9. Fat people do not necessarily eat more than other people.

Filler Items

1. Jokes about fat people are funny.
2. If someone in my family were fat, I'd be ashamed of him or her.

3. I can't stand to look at fat people.
4. Fat people are disgusting.
5. If I have the choice, I'd rather not sit next to a fat person.
6. I hate it when fat people take up more room then they should in a theater or on a bus or a plane.
7. Most fat people don't care about anyone but themselves.
8. Fat people don't care about their appearance.
9. If I owned a business, I would not hire fat people because of the way they look.
10. I'd feel self-conscious being seen in public with a fat person.
11. The existence of organization to lobby for the rights of fat people in our society is a good idea.
12. Fat people obviously have a character flaw otherwise they wouldn't become fat.
13. It makes me angry to hear anybody say insulting things about people because they are fat.

Each item is accompanied by the following response format: 1=definitely disagree; 2=mostly disagree; 3=neither agree nor disagree; 4=mostly agree; 5=definitely agree. The following items are reverse scored: Items 7 and 13 (Social/Character Disparagement subscale); Items 1,9, and 10 (Physical)

Measure 3: Beliefs about Obese Persons (BAOP) Scale: used to measure explicit attitudes towards weight

Directions: For each statement, select the response option that corresponds to your opinion. -3=I strongly disagree; -2=I moderately disagree; -1=I slightly disagree; +1=I slightly agree; +2=I moderately agree; +3=I strongly agree. Please read each statement carefully and answer truthfully.

1. Obesity often occurs when eating is used as a form of compensation for lack of love or attention.
2. In many cases, obesity is the result of a biological disorder.
3. Obesity is usually caused by overeating.
4. Most obese people cause their problem by not getting enough exercise.
5. Most obese people eat more than nonobese people.
6. The majority of obese people have poor eating habits that lead to their obesity.
7. Obesity is rarely caused by a lack of willpower.
8. People can be addicted to food, just as others are addicted to drugs, and these people usually become obese.

Reference: Allison, D.B., Basile, V.C., & Yuker, H. E. (1991). The measurement of attitudes toward and beliefs about obese persons. International Journal of Eating Disorders, 10, 599-607.

Measure 4: Attitudes Toward Obese Persons (ATOP) Scale: used to measure explicit attitudes towards weight.
Directions: For each statement, select the response option that corresponds to your opinion. -3=I strongly disagree; -2=I moderately disagree; -1=I slightly disagree; +1=I slightly agree; +2=I moderately agree; +3=I strongly agree. Please read each statement carefully and answer truthfully.

1. Obese people are as happy as nonobese people.
2. Most obese people feel that they are not as good as other people.
3. Most obese people are more self-conscious than other people.
4. Obese workers cannot be as successful as other workers.
5. Most nonobese people would not want to marry anyone who is obese.
6. Severely obese people are usually untidy.
7. Obese people are usually sociable.
8. Most obese people are not dissatisfied with themselves.
9. Obese people are just as self-confident as other people.
10. Most people feel uncomfortable when they associate with obese people.
11. Obese people are often less aggressive than nonobese people.
12. Most obese people have different personalities than nonobese people.
13. Very few obese people are ashamed of their weight.
14. Most obese people resent normal weight people.
15. Obese people are more emotional than nonobese people.
16. Obese people should not expect to lead normal lives.
17. Obese people are just as healthy as nonobese people.
18. Obese people are just as sexually attractive as nonobese people.
19. Obese people tend to have family problems.
20. One of the worst things that could happen to a person would be for him to become obese.

Allison, D. B., Basile, V. C., & Yuker, H. E. (1991). The measurement of attitudes toward and beliefs about obese persons. *International Journal of Eating Disorders*, *10*(5), 599–607.

Measure 5: Weight Task Implicit Association Task

IAT materials and stimulus are provided by The Rudd Center for Food Policy and Obesity. These tools are part of a publicly available toolkit. Materials are from Module 1. http://biastoolkit.uconnruddcenter.org/module1.html

The Weight Implicit Association Test is used to measure the implicit attitudes that people have towards weight. It is a test used to measure the strength of unconscious attributions. In other words, it gives us a unique measure for beliefs and attitudes that are held within the mind that we do not know about or often don't want to express. This test is useful in seeing what people unconsciously feel and not what they think that they feel or think that it is appropriate for them to self-report (Cunningham, Preacher, & Banaji, 2001).

Two tests were administered. One assessed the overall implicit bias attitudes. This test used association of the "fat people" and "thin people" associations with "good" vs "bad." Another test was used to measure the implicit association between "fat people" and "think people" association with "lazy" vs "motivated". This test was used to target the perceived controllability.

Instructions to participants: You are now asked to participate in two brief word-classifying tasks. We are interested in how people categorize words. For this task, you will have 20 seconds to classify as many of the items you can running down the screen into the categories they belong to at the top of the page.

Please see the example provided. You will begin the tasks after this example to familiarize yourself.

Insects	**Flowers**
bugs	daffodil
mosquito	daisy
roach	tulip
Bad	**Good**
terrible	wonderful
nasty	joyful
horrible	excellent

Flowers Bad		Insects Good
O	wonderful	✓
O	Roach	✓
✓	nasty	O
✓	Daisy	O
O	joyful	O
O	Tulip	O
O	terrible	O

In this task, you will notice that there are 2 categories on each side. For every item that is a flower (daffodil, daisy, or tulip) or a word that means 'bad' (nasty, terrible, or horrible) you will put a check in the left circle. In contrast, for every item that is an insect (bugs, mosquito, or roach) or a word that means 'good' (excellent, joyful, or wonderful) you will put a check in the right circle. Remember that there are 4 categories so you are not deciding if you think flowers and insects are good or bad, you are just putting flowers into the flower group, insects into the insect group, words that mean good in the good group and words that mean bad in the bad group. As you can see here, wonderful goes in the good group, and Roach, goes in the Insect group, which are both on the right column. Nasty goes in the bad group and Daisy goes in the Flower group, which are both in the left column. The words are in random order, so you will need to look at each one and then check the appropriate column.

Insects Bad		Flowers Good
O	wonderful	✓
✓	Roach	O
✓	nasty	O
O	Daisy	✓
O	joyful	O
O	Tulip	O
O	terrible	O

Now the instructions are the same except 2 of the categories have switched sides. Notice that now insects and bad words go to the left side and flower and good words go to the right. So here, wonderful goes in the good column on the right, and roach goes on the insect column on the left. Nasty goes in the Bad column on the left and Daisy goes in the flower column on the right. Same instructions as on the previous page - go as fast as you can and make as few mistakes as possible.

Good/Bad Test:
Instructions: You are now asked to participate in two brief word-classifying tasks. We are interested in how people categorize words. For this task, you will have 20 seconds to classify as many of the items you can running down the screen into the categories they belong to at the top of the page.
Motivated/Lazy Test:

Please see IAT stimulus on Appendix F

Measure 6: State Empathy Test (Empathy Manipulation Check)

This measure is used as an empathy manipulation check post-intervention. This is to see if the empathy levels experienced by those reading either the factual or vignette interventions are indeed different. The original measure used the word "character". In the manipulation used in the study, this word was substituted with "group".

Directions: For each statement, select the response option that corresponds to your opinion. 0="not at all"; 1; 2; 3; 4="completely"

"Group" refers to those who are overweight and/or obese.

1. The group's emotions are genuine.
2. I experienced the same emotions as the group when reading this message.
3. I was in a similar emotional state as the group when reading this message.
4. I can feel the group's emotions.
5. I can see the group's point of view.
6. I recognize the group's situation.
7. I can understand what the group was going through in the message.
8. The group's reactions to the situation are understandable.
9. When reading the message, I was fully absorbed.
10. I can relate to what the group was going through in the message.
11. I can identify with the situation described in the message.
12. I can identify with the group in the message.

Measure 6 continue: Original Items and Dimensions of the State Empathy Scale
(Measure used was adapted from this original version)

Dimensions	Items
Affective Empathy	1. The character's emotions are genuine.
	2. I experienced the same emotions as the character when reading this message.
	3. I was in a similar emotional state as the character when reading this message.
	4. I can feel the character's emotions
Cognitive Empathy	5. I can see the character's point of view.
	6. I recognize the character's situation.
	7. I can understand what the character was going through in the message.
	8. The character's reactions to the situation are understandable.
Associative Empathy	9. When watching the message, I was fully absorbed
	10. I can relate to what the character was going through in the message
	11. I can identify with the situation described in the message
	12. I can identify with the characters in the message

Shen, L. (2010). On a Scale of State Empathy During Message Processing. *Western Journal of Communication*, *74*(5), 504–524. http://doi.org/10.1080/10570314.2010.512278

Distraction Task 1:

Directions: You will be given 3 minutes to list as many states as possible. Write the names of all the states that you can identify in the space provided below.

Image taken from
http://www.freeusandworldmaps.com/images/USPrintable/USA52BlankBWPrint.jpg

Distraction Task 2:

Directions: You will be given 3 minutes to list as many countries as possible. Write the names of all the states that you can identify in the space provided below.

Imagine taken from http://educypedia.karadimov.info/library/worldoutlinemap.gif

Appendix F: Intervention Passages (IV)

Factual causes of overweight/obesity:

The causes of being overweight and/or obese are very complex with a combination of genetic, environmental, and psychological factors playing a large role. This recognition is known as multifactorial causes of weight gain and/or obesity and highlights these complex interactions. In a time when more than one-third (34.9% or 78.6 million) of U.S. adults are obese, it is important to have an accurate picture of the many factors that play a role in weight gain.

It is important to understand all contributing factors, including personal ones like behavior and genetics and as well as environmental factors. Dietary patterns, the use of medications, physical activity and inactivity are considered "behavioral factors". However, these factors are influenced and determined by a person's environment as well. Whether people have access to safe green spaces for exercising, available transportation to go grocery stores that have fresh produce, and live in a food desert are all influential. Education as well as food marketing and promotion are also contributing factors. In essence, body weight is only partly determined by diet and exercise. Experts have cautioned against minimizing the roles that genetics and environmental factors play.

Body Mass Index, or BMI, is commonly used as a screening tool to determine whether a person is overweight and/or obese. The amount of energy input and energy output helps to determine BMI. Dietary consumption is associated with energy intake. Excess energy is stored and often comes from eating a lot of sugar, carbohydrates, or fats. Energy output is also determined by one's basal metabolic rate, which is the amount of energy a person burns while at rest. Another phenomenon is known as the diet-induced thermogenesis, which is the amount of energy expenditure that is actually burned to process the food that is needed for use and storage. Around 10% of the total amount of calories consumed is used for this process.

However, diet and physical activity is not the only thing to examine. After the food is digested, there are different hormones that regulate the amount of energy that is either used or stored. In other words, hormones play a part in determining this energy intake and output ratio. Leptin, insulin, and ghrelin are three such hormones. Leptin regulates blood lipid levels and helps to regulate energy balance by inhibiting hunger, insulin regulates blood glucose levels, and ghrelin regulates how hungry people feel. Leptin, known as the "satiety" hormone, and ghrelin, known as the "hunger hormone" work in opposition. These hormones, among others, have important roles in determining whether a person has either a high or low body mass. Hormonal and metabolic changes must be considered.

Illnesses such as Cushing's disease and polycystic ovary syndrome may also led to weight gain and/or to obesity. Medications that people often need, such as steroids and some antidepressants, have also influenced weight gain. A person's chemical exposure and personal microbiome are additional factors to consider. Microbiome is the variation

of bacterial species that reside in the digestive systems and this variation has been linked to weight gain according to recent studies.

In addition, there are connections between being overweight and/or obese and geography. Particularly, living in a food desert makes it extremely difficult, if not impossible, for people to buy fresh produce and healthier foods that are affordable. A food desert is an urban area where good-quality fresh food is rare to find in stores. In fact, there are no grocery stores in this area. People living in this area must depend on convenience stores, fast food restaurants, and gas stations to obtain their nourishment. According to the Department of Agriculture, 23.5 million people live in low-income areas where they are 1 mile from a supermarket. Low-income residential areas most often live in food deserts. Food deserts often exist in rural enclaves. Those who live in food deserts have higher rates of obesity. Even if people want to eat healthier, without having access to these foods, it is extremely difficult.

Despite these intricate and multifactorial causes of weight gain and/or obesity, people who are overweight and/or obese face stigma in many areas in life. Extensive research has been done on the damaging effects stigma causes. Although definitions vary, stigma occurs when people with certain features, associated with negative beliefs and biases regarding various internal characteristics like personality and efficacy, are discriminated against. By the nature of the definition, any feature that is deemed undesirable can be used to stigmatize individuals. Currently, weight is the feature that has been seeing an increase in stigma. Those targeted by stigma can experience negative body image, diminished self-esteem, and avoid preventive care in fear of judgment by health care professionals. Up to 69% of overweight and/or obese women report experiencing weight bias from health care professionals, according to a research study. These are just a few of the psychological consequences.

Being overweight and/or obese is not the result of one cause and cannot be simply understood. Understanding this complex interplay of the factors, among others, presented above is imperative.

Vignette about overweight/obesity:

Hi, my name is Laura. I'm about to tell you a bit of what I constantly experience. I believe that there are many adjectives that describe me, but all that people seem to see is my weight and simply make assumptions based off of that. You see, I'm overweight. I know that. Being overweight is hard to deal with for all sorts of reasons. For me, personally, the biggest problem that I have been facing is how people treat me. I want to share my experience with you in hopes that you come to understand a part of my life and the emotional, mental, and physical toll that prejudices and discrimination have on me.

For one, people think that because I am overweight: I am lazy, stupid, ugly, unhappy, unpopular, mean, greedy, and gross. People assume all this just because of how heavy I look. I wished that people would actually get to know me before concluding these things. These assumptions are not only untrue, but they also hurt and alienate me.

Weight is something that I have been consciously trying to lose, - I exercise and I have a healthy diet. In other words, I'm doing what everyone thinks is needed to lose weight. It's hurtful when people glare at me with disgust when I go to the gym. It's like I am too repulsive to use the same gym with them. I'm doing the best I can with the body I have. People also think that because I am overweight, I cannot control how much I eat. People think that I brought this condition on myself, concluding that I must be extremely lazy and eat too much. I can control how much I eat; I actually eat well; I am active.

In high school, classmate would make sly comments to me asking me if I'm "searching for twinkies" when looking for assignments in my backpack or calling me "that pig." This relentless bullying and teasing was not limited to just high school. I've heard people snicker about me at the doctor's office and at hospitals, whispering, "You got to work hard to actually get that overweight." I don't feel comfortable even going to the doctor's office for preventive care. I have felt that all my doctor sees is my weight. I hope my doctor actually cared about the fact that I have been trying to lose weight.

I am not alone in feeling this way. Thousands of people have faced such discrimination. These negative experiences can actually led to unhealthy eating, lower physical activity, and an increased prevalence of psychological disorders. My friends, peers, and family members may think that weight blame, stigma, and intolerance are motivators for weight loss. However, studies have found that this is not the case. These negative attitudes are not constructive. In addition, pediatricians said that parents mistakenly think that simply being thin equates to healthy and that being overweight equates to being very unhealthy. This is one of the biggest misconceptions and that parents should value health over appearance. There have been many studies that indicate that there are genetically, hormonally, environmental, socioeconomically factors, among others, that play a role in weight. These studies indicate that health comes in different sizes.

Although verbal discrimination is hurtful, sometimes it's the nonverbal, body language that hurts the most. People deliberately look away from me and sit as far as possible away from me. It's like if we talked or made eye contact, I would make them gain weight on the spot. It pains me to know, understand, and live with the fact that when someone sees

an overweight person, like me, people think they automatically know everything about me. I have to live everyday knowing that people automatically think less of me. It hurts. People don't respect me.

Think about how the media, from magazines to TV shows, portray weight. All these things affect how people respond, treat, and think about people like me. To our society, I am a blameworthy fat person, instead of Laura.

I'm trying hard not to internalize all these negative beliefs, attitudes, and behaviors that people have towards me. But I'm constantly feeling rejected and hurt. I have had moments where I have internalize them and just hate myself for being overweight. I just want to be understood as Laura.

Appendix G: Paper IAT Stimulus

Fat People	Thin People
fat	slim
obese	thin
large	skinny
Bad	**Good**
terrible	wonderful
nasty	joyful
horrible	excellent

Fat People	Thin People
fat	slim
obese	thin
large	skinny
Bad	**Good**
terrible	wonderful
nasty	joyful
horrible	excellent

Fat People		Thin People
Bad		**Good**
O	obese	O
O	horrible	O
O	slim	O
O	excellent	O
O	large	O
O	nasty	O
O	fat	O
O	joyful	O
O	thin	O
O	wonderful	O
O	skinny	O
O	terrible	O
O	obese	O
O	horrible	O
O	slim	O
O	joyful	O
O	thin	O
O	terrible	O
O	skinny	O
O	excellent	O
O	large	O
O	nasty	O
O	fat	O
O	wonderful	O

Fat People		Thin People
Bad		**Good**
O	terrible	O
O	thin	O
O	wonderful	O
O	fat	O
O	nasty	O
O	slim	O
O	excellent	O
O	large	O
O	horrible	O
O	obese	O
O	joyful	O
O	skinny	O
O	horrible	O
O	fat	O
O	joyful	O
O	slim	O
O	nasty	O
O	obese	O
O	wonderful	O
O	skinny	O
O	excellent	O
O	large	O
O	terrible	O
O	thin	O

Fat People	**Thin People**
fat	slim
obese	thin
large	skinny
Good	**Bad**
wonderful	terrible
joyful	nasty
excellent	horrible

Fat People	**Thin People**
fat	slim
obese	thin
large	skinny
Good	**Bad**
wonderful	terrible
joyful	nasty
excellent	horrible

Fat People		**Thin People**
Good		**Bad**
O	obese	O
O	horrible	O
O	slim	O
O	excellent	O
O	large	O
O	nasty	O
O	fat	O
O	joyful	O
O	thin	O
O	wonderful	O
O	skinny	O
O	terrible	O
O	obese	O
O	horrible	O
O	slim	O
O	joyful	O
O	thin	O
O	terrible	O
O	skinny	O
O	excellent	O
O	large	O
O	nasty	O
O	fat	O
O	wonderful	O

Fat People		**Thin People**
Good		**Bad**
O	terrible	O
O	thin	O
O	wonderful	O
O	fat	O
O	nasty	O
O	slim	O
O	excellent	O
O	large	O
O	horrible	O
O	obese	O
O	joyful	O
O	skinny	O
O	horrible	O
O	fat	O
O	joyful	O
O	slim	O
O	nasty	O
O	obese	O
O	wonderful	O
O	skinny	O
O	excellent	O
O	large	O
O	terrible	O
O	thin	O

Fat People	Thin People
fat	slim
obese	thin
large	skinny
Lazy	**Motivated**
slow	determined
lazy	motivated
sluggish	eager

Fat People	Thin People
fat	slim
obese	thin
large	skinny
Lazy	**Motivated**
slow	determined
lazy	motivated
sluggish	eager

Fat People		Thin People
Lazy		**Motivated**
O	obese	O
O	sluggish	O
O	slim	O
O	eager	O
O	large	O
O	lazy	O
O	fat	O
O	motivated	O
O	thin	O
O	determined	O
O	skinny	O
O	slow	O
O	obese	O
O	sluggish	O
O	slim	O
O	motivated	O
O	thin	O
O	slow	O
O	skinny	O
O	eager	O
O	large	O
O	lazy	O
O	fat	O
O	determined	O

Fat People		Thin People
Lazy		**Motivated**
O	slow	O
O	thin	O
O	determined	O
O	fat	O
O	lazy	O
O	slim	O
O	eager	O
O	large	O
O	sluggish	O
O	obese	O
O	motivated	O
O	skinny	O
O	sluggish	O
O	fat	O
O	motivated	O
O	slim	O
O	lazy	O
O	obese	O
O	determined	O
O	skinny	O
O	eager	O
O	large	O
O	slow	O
O	thin	O

Fat People	**Thin People**
fat	slim
obese	thin
large	skinny
Motivated	**Lazy**
determined	slow
motivated	lazy
eager	sluggish

Fat People	**Thin People**
fat	slim
obese	thin
large	skinny
Motivated	**Lazy**
determined	slow
motivated	lazy
eager	sluggish

Fat People		**Thin People**
Motivated		**Lazy**
O	obese	O
O	sluggish	O
O	slim	O
O	eager	O
O	large	O
O	lazy	O
O	fat	O
O	motivated	O
O	thin	O
O	determined	O
O	skinny	O
O	slow	O
O	obese	O
O	sluggish	O
O	slim	O
O	motivated	O
O	thin	O
O	slow	O
O	skinny	O
O	eager	O
O	large	O
O	lazy	O
O	fat	O
O	determined	O

Fat People		**Thin People**
Motivated		**Lazy**
O	slow	O
O	thin	O
O	determined	O
O	fat	O
O	lazy	O
O	slim	O
O	eager	O
O	large	O
O	sluggish	O
O	obese	O
O	motivated	O
O	skinny	O
O	sluggish	O
O	fat	O
O	motivated	O
O	slim	O
O	lazy	O
O	obese	O
O	determined	O
O	skinny	O
O	eager	O
O	large	O
O	slow	O
O	thin	O

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BIOGRAPHY

Young-Jee Jung was born in Stillwater, Oklahoma and lived in College Station before heading to the University of Texas at Austin in 2012. She is graduating with a Bachelor of Arts degree in Plan II Honors and a Bachelor of Science degree in Psychology Honors. All the spontaneous and random adventures she had with friends, often while procrastinating, have made a lasting impact on her. She treasures all the memories, experiences, and friends she has made at UT.

She will be attending medical school in the fall of 2017 and hopes to become a primary care physician. She feels incredibly blessed to have been given the opportunity to purse a liberal arts education before attending medical school. She believes that Plan II and Psychology have equipped and taught her to think, ask the hard questions, and engage in open, honest dialogue.